

THE  
REGISTRAR GENERAL'S  
STATISTICAL REVIEW  
OF  
ENGLAND AND WALES  
FOR THE YEAR  
1951  
TEXT VOLUME

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# EXPLANATORY NOTES

## 1. Numbering of Tables

Of the tables referred to in this review, those numbered in Arabic numerals, will be found in "Tables, Part I—Medical", and those lettered will be found in "Tables, Part II—Civil", for the year in question, whilst those numbered in Roman numerals appear in this volume.

## 2. Indication of Significance

Rates based upon less than 20 births, deaths or cases notified are distinguished by italic type as a warning to the user that the smallness of the experience may affect their significance. Rates given as 0 indicate that the rate is insignificant. A dash (—) in tables showing rates indicates that there were no deaths or cases.

## 3. Regions

The constitution of the Standard Regions of England and Wales that are used in this volume is as follows :—

<p>REGION I. <i>Northern.</i> Cumberland. Durham. Northumberland. Westmorland. Yorkshire, North Riding.</p> <p>REGION II. <i>East and West Ridings.</i> Yorkshire, East Riding. Yorkshire, West Riding.</p> <p>REGION III. <i>North Midland.</i> Derbyshire, Part of<sup>1</sup> Leicestershire. Lincolnshire— Parts of Holland. Parts of Kesteven. Parts of Lindsey. Northamptonshire. Nottinghamshire. Peterborough, Soke of. Rutland.</p>	<p>REGION IV. <i>Eastern.</i> Bedfordshire. Cambridgeshire. Ely, Isle of. Essex, Part of<sup>2</sup> Hertfordshire, Part of<sup>3</sup> Huntingdonshire. Norfolk. Suffolk, East. Suffolk, West.</p> <p>REGION V. <i>London and South Eastern.</i> Essex, Part of<sup>4</sup> Hertfordshire, Part of<sup>5</sup> Kent. London Admin. County. Middlesex. Surrey. Sussex, East. Sussex, West.</p>	<p>REGION VI. <i>Southern.</i> Berkshire. Buckinghamshire. Dorset. Oxfordshire. Southampton. Wight, Isle of.</p> <p>REGION VII. <i>South Western.</i> Cornwall. Devon. Gloucestershire Somerset. Wiltshire.</p> <p>REGION VIII. <i>Wales I.</i> Brecknockshire. Carmarthenshire. Glamorganshire. Monmouthshire.</p>	<p><i>Wales II</i> Anglesey. Caernarvonshire. Cardiganshire. Denbighshire. Flintshire. Merionethshire. Montgomeryshire. Pembrokeshire. Radnorshire.</p> <p>REGION IX. <i>Midland.</i> Herefordshire Shropshire. Staffordshire. Warwickshire. Worcestershire.</p> <p>REGION X. <i>North Western.</i> Cheshire. Derbyshire, Part of<sup>6</sup> Lancashire.</p>
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1. All except Buxton M.B., Glossop M.B., New Mills U.D., Whaley Bridge U.D., and Chapel en le Frith R.D.
2. All except East Ham C.B., West Ham C.B., Chingford M.B., Wanstead and Woodford M.B., Leyton M.B., Walthamstow M.B., Ilford M.B., Barking M.B., Dagenham M.B., Waltham Holy Cross U.D., and Chigwell U.D.
3. All except Barnet U.D., Bushey U.D., Cheshunt U.D., East Barnet U.D., and Elstree R.D.
4. All areas stated in 2 above.
5. All areas stated in 3 above.
6. All areas stated in 1 above.

## 4. Conurbations

The conurbation areas used in this volume were agreed by an interdepartmental committee, representing the principal Departments preparing statistics, as a means of securing uniformity and comparability in statistics published by Government Departments in the United Kingdom.

Conurbation is the word used to describe those areas of urban development where a number of separate towns have grown into each other and become linked by such factors as a common industrial or business interest, or a common centre of shopping, education, etc. The conurbations are each made up of a collection of complete local authority areas, constituted as follows :—

	Durham	Tyneside	Northumberland
Gateshead C.B.	Felling U.D.	Newcastle-upon-Tyne C.B.	Longbenton U.D.
South Shields C.B.	Hebburn U.D.	Tynemouth C.B.	Newburn U.D.
	Jarrow M.B.		Wallsend M.B.
	Whickham U.D.	Gosforth U.D.	Whitley Bay U.D.



## EXPLANATORY NOTES—continued.

## West Yorkshire

*Yorkshire, West Riding*

Bradford C.B.	Aireborough U.D.	Heckmondwike U.D.	Ossett M.B.
Dewsbury C.B.	Baildon U.D.	Holmfirth U.D.	Pudsey M.B.
Halifax C.B.	Batley M.B.	Horbury U.D.	Queensbury and Shelf
Huddersfield C.B.	Bingley U.D.	Horsforth U.D.	U.D.
Leeds C.B.	Brighouse M.B.	Keighley M.B.	Ripponden U.D.
Wakefield C.B.			Rothwell U.D.
	Colne Valley U.D.	Kirkburton U.D.	
	Denby Dale U.D.	Meltham U.D.	Shipley U.D.
	Denholme U.D.	Mirfield U.D.	Sowerby Bridge U.D.
	Elland U.D.	Morley M.B.	Spenborough U.D.
			Stanley U.D.

### South East Lancashire

## Cheshire

*Lancashire*

Stockport C.B.	Bolton C.B.	Horwich U.D.	Urmston U.D.
Alderley Edge U.D.	Bury C.B.	Irlam U.D.	Wardle U.D.
Altrincham M.B.	Manchester C.B.	Kearsley U.D.	Westhoughton U.D.
Bowden U.D.	Oldham C.B.	Lees U.D.	Whitefield U.D.
Bredbury and Romiley U.D.	Rochdale C.B.	Littleborough U.D.	Whitworth U.D.
Cheadle and Gatley U.D.	Salford C.B.	Little Lever U.D.	Worsley U.D.
Dukinfield M.B.	Ashton-under-Lyne M.B.	Middleton M.B.	Limehurst R.D.
Hale U.D.	Audenshaw U.D.	Milnrow U.D.	
Hazelgrove and Bramhall U.D.	Chadderton U.D.	Mossley M.B.	
Hyde M.B.	Crompton U.D.	Prestwich M.B.	
Marple U.D.	Denton U.D.	Radcliffe M.B.	
Sale M.B.	Droylsden U.D.	Royton U.D.	
Stalybridge M.B.	Eccles M.B.	Stretford M.B.	
Wilmslow U.D.	Failsworth U.D.	Swinton and Pendlebury M.B.	
	Farnworth M.B.	Tottington U.D.	
Disley R.D.	Heywood M.B.		

## Merseyside

## Cheshire

*Lancashire*

Birkenhead C.B.	Ellesmere Port U.D.	Bootle C.B.	Huyton with Roby U.D.
Wallasey C.B.	Hoylelake U.D.	Liverpool C.B.	Litherland U.D.
	Neston U.D.		
Bebington M.B.	Wirral U.D.	Crosby M.B.	

## West Midlands

## Staffordshire

## Warwickshire

### Worcestershire

Staffordshire	Warwickshire	Worcestershire
Smethwick C.B.	Birmingham C.B.	Dudley C.B.
Walsall C.B.		
West Bromwich C.B.	Solihull U.D.	Halesowen M.B.
Wolverhampton C.B.	Sutton Coldfield M.B.	Oldbury M.B.
		Stourbridge M.B.
Aldridge U.D.		
Amblecote U.D.		
Bilston M.B.		
Brierley Hill U.D.		
Coseley U.D.		
Darlaston U.D.		
Rowley Regis M.B.		
Sedgley U.D.		
Tettenhall U.D.		
Tipton M.B.		
Wednesbury M.B.		
Wednesfield U.D.		
Willenhall U.D.		

## Greater London

*London*  
(whole county)  
*Middlesex*  
(whole county)

## Kent

## Essex

	(whole county)	Beckenham M.B.	East Ham C.B.
	<i>Middlesex</i>	Bexley M.B.	West Ham C.B.
	(whole county)	Bromley M.B.	
	<i>Surrey</i>	Chislehurst and Sidcup U.D.	Barking M.B.
Croydon C.B.	Kingston upon Thames M.B.	Crayford U.D.	Chigwell U.D.
Banstead U.D.	Malden and Coombe M.B.	Erith M.B.	Chingford M.B.
Barnes M.B.	Merton and Morden U.D.	Orpington U.D.	Dagenham M.B.
Beddington and Wallington M.B.	Mitcham M.B.	Penge U.D.	Ilford M.B.
Carshalton U.D.	Richmond M.B.	<i>Hertfordshire</i>	Leyton M.B.
	Surbiton M.B.	Barnet U.D.	Waltham Holy Cross U.D.
Coulsdon and Purley U.D.	Sutton and Cheam M.B.	Bushey U.D.	Walthamstow M.B.
Epsom and Ewell M.B.	Wimbledon M.B.	Cheshunt U.D.	Wanstead and Woodford M.B.
Esher U.D.		East Barnet U.D.	
		Elstree R.D.	

## 5. General

See also explanatory notes to the Tables volumes, Parts I and II.



## CORRIGENDA

### Statistical Review, 1946-50, Text, Civil

- Page 125. Table LXX, Part (a),  
1945/46 cohort, duration 2- years,  
*for* 129 *read* 128.  
Table LXX, Part (b), 1945/46 cohort,  
duration 2- years, *for* 629 *read* 628,  
duration 3- years, *for* 698 *read* 697,  
duration 4- years, *for* 738 *read* 737.
- Page 196. Appendix II, Table 6, Part I,  
Under 25, 1937-38 cohort, duration 2 years,  
*for* 629 *read* 639.
- Page 217. Line 7, *for* pages 220-221 *read* page 213.
- Page 220. Appendix III, Table 4, Section 7, year of birth 1871.  
age 15- *for* 3,472 *read* 3,550,  
age 20- *for* 3,550 *read* 3,472.

### Statistical Review, 1950, Text, Medical

- Page 157. Influenza table heading,  
*for* per 100,000 living,  
*read* per million living.







## INTRODUCTION

The present volume is the first Text (i.e. commentary) volume of the Registrar General's Statistical Review to cover both civil and medical statistics since the Text volume for the years 1938–39 was published in 1947. This was the normal pre-war practice. It is hoped that reversion to it will give readers a better opportunity to survey the whole field of the year's vital statistics.

### Object of the Text Volume

The primary object of the Text volume is to provide a commentary on those statistics of the period under review which have already been published in the Tables volumes of the Statistical Review. This commentary aims to set the statistics in perspective particularly by drawing attention to trends and significant characteristics which will be a guide to research workers and others concerned with public health and with vital and health statistics. It also seeks to explain the reasons for changes in presentation of the statistics as the interest and the significance of different factors change. Obviously on some subjects commentary in the Review every year is unnecessary or impossible either because nothing of significance has happened or because, the numbers being comparatively small, the experience of a series of years is needed before worthwhile comment can be made. Thus, in the present volume Maternal Mortality and Multiple Births are not treated at length. With these topics, as with some causes of death, a periodic review over several years is likely to be the most useful approach.

In addition to this primary aim, it is necessary to relate the vital statistics of a year to other work in similar fields. In particular, there have been great developments since the war in international discussion and interest in the fields of demography and health statistics ; a reference to the activities of such bodies as the World Health Organization and the Population Commission of the United Nations assists understanding of their influence on work in similar fields in this country and at the same time illustrates the contribution made by this country to their work. Some account of these activities is given herein.

Finally, to complete the story of the year's work, a brief description is added of other activities of the General Register Office. In particular, there is a summary of the operation and uses of the National Register from its beginning in 1939, an account of the progress of the registration (births, deaths and marriages) service during the year, a list of committees on which the Registrar General was represented and a list of published contributions by officers of the Department.

### Civil and Medical Statistics

The statistical commentary of the present volume falls into two main parts, corresponding to the division of the Tables volumes into Civil and Medical statistics respectively.

The civil part is concerned in the main with population, births and fertility, marriages and divorces ; the primary aim here is to show what trends are apparent in post-war experience and to compare them so far as possible with the pre-war position. It is hoped that this account will be of value to research workers and others as a guide to the large volume of statistics which is now available in this field.



The medical part of the present volume, like the Medical Text volumes of earlier years, is concerned with the mortality and notification statistics of the year, particularly where they point to the need for further action or research. It cannot be exhaustive in this respect, whether in the subjects covered or in the extent to which they are examined. The purpose is to provoke others to examine further those matters which *prima facie* appear to merit investigation and to provide evidence to help in deciding where and in what ways administrative and clinical action might be taken.

The subjects discussed show some changes from other recent years. This year, maternal mortality, which continued to decline, is not discussed. Compared with the year 1950, greater emphasis is placed on respiratory diseases in view of the serious influenza epidemic early in 1951 and a section on diseases of the circulatory system is introduced in view of their increasing importance as a cause of death.

As noted in earlier volumes, mortality statistics can give but a partial picture of the condition of the people's health, but Supplements to the Annual Review, which deal with the conditions treated in mental and other hospitals, cases of cancer registered by hospitals and the illnesses and ailments reported to interviewers by a sample of the population, are being prepared and will later be published for the two years 1950 and 1951.

A useful step towards improving knowledge of the illnesses from which people suffer was taken early in 1951 when ten general practitioners started recording, for statistical analysis by the General Register Office, details of what their patients consulted them for. The first year's results of this enquiry have been published\* and a further two years' results are being analysed. Plans are now being made, in collaboration with the College of General Practitioners, to conduct a similar enquiry based on the records of some 100 practices.

As in previous years, the Department is indebted to the Registrar General's Advisory Committee on Medical Nomenclature and Statistics, under the chairmanship of Sir Ernest Rock Carling, for much valuable assistance and advice in planning and overcoming difficulties encountered in the various enquiries which the Department undertakes, and also for keeping the Department in closer touch with those who can use its material with profit. The list of members of the main Committee and of the Sub-Committee is given in Appendix D (page 308). A report relating to the Committee's work during 1951 and 1952 has been published in the Registrar General's Quarterly Return for the December Quarter, 1952.

### Population

1951 was the first year since 1931 in which a census of population was held. Preliminary results of the Census from the provisional count were used as the foundation for the mid-year estimates for local authority areas (pages 13-17) ; and data from the 1 per cent sample contributed to the national estimates of the population by sex, age and marital condition (pages 10-13).

### Births, Fertility and Reproductivity

This is one of the more important subjects dealt with by the Text volume. The value of population studies lies not only in their analysis of the present population and its composition but in the indications they can give on future

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\* Studies on Medical and Population Subjects, No. 7 : General Practitioners' Records—An analysis of the clinical records of eight practices during the period April 1951 to March 1952. H.M.S.O., price 8s. 6d. net.



trends. In this sense an analysis of fertility is essential both to show what has happened and to provide pointers to the future.

Pages 43 to 49 of the present volume throw light on some striking changes which seem to be taking place in family building habits. "Seem" is the appropriate word because the experience of 1951 is not sufficient in itself to justify a firm conclusion. Nevertheless, there is evidence that the disturbances of the war are past and that fertility is reaching a comparatively stable level above that of the pre-war period 1931-38 (page 20).

Another suggestion offered is that the size of families may be becoming more uniform, in that the proportion both of childless families and of large families may be decreasing. The evidence for this is discussed in the section on "maternities by number of previous children" (page 44).

One reason for caution in making comparisons of fertility is that much of the information was only collected for the first time under the Population (Statistics) Act in 1938 and that year is not necessarily a normal pre-war year. Although the trends are still uncertain, it may be that with the help of the continuing information provided under the Act it will be possible to look back in a few years' time and see that the year 1951 did in fact mark the beginning of a relatively stable period of fertility.

### **Marriage and Divorce**

Present fertility affects both the size and the composition of the future population. Going back a stage further, changes in the present marriage rate are likely to affect present and future fertility; and the population structure of the past has some influence on present marriage rates. The interaction of the various factors is well illustrated by the following facts: the proportion of men to women in the population aged 15-44 has been steadily increasing since 1921; since 1938 marriage rates have on an average been maintained at a higher level than the highest previously recorded, which was in the nineteenth century. The combination of these two facts has produced some striking results: taking into account only those men and women who, at a particular period, were not married, we find that, whereas at ages 25-34 there were 960 men for every 1,000 women in 1931, the figure in 1951 was 1,349. Similarly, the proportion of married women in the total population of women has increased enormously (at ages 15-19 it was in 1951 83 per cent above 1938, at ages 20-24 45 per cent higher). There has thus been a remarkable change in marriage habits so that not only are more people married but they tend, especially the girls, to marry younger; an important factor has been the relatively greater "supply" of marriageable young men. This tendency has undoubtedly played its part in the increased fertility mentioned in the last section. Marriages are discussed on pages 62 to 77.

The importance of divorce and its effect on the numbers of people married in the population is discussed on pages 80-83. It is probable that about two-thirds to three-quarters of those who have been divorced ultimately re-marry.

### **Mortality in 1951**

The 549,380 deaths registered in England and Wales in 1951 were 8 per cent more than those registered in 1950. More than a third of them were registered in the March quarter when there was an influenza epidemic more severe than any since 1943. There is no reason to think that any other factor had a marked influence in increasing the mortality of the year and the size of the increase emphasizes, if emphasis is needed, the importance of having ready the means



of controlling such an epidemic, or better still, of discovering how to prevent it altogether. That the epidemic had little effect on mortality at ages under 45 does not detract from the fact that it imposed a heavy burden on the medical services and seriously affected the productive resources of the country while it lasted. The Survey of Sickness shows that the number of medical consultations of adults in the March quarter of 1951 was 12 per cent greater than in the March quarter of the previous year ; this represents an increase of about six million consultations, but it does not reflect the full strain on general practitioner services, since less urgent needs were no doubt postponed or not met at all. The effect on the country's productive resources is evident from the excess of 647,600 new claims to sickness benefit under the National Insurance scheme in the March quarter compared with the corresponding period of 1950.

### Infant Mortality

Vital statistics have in the past undoubtedly contributed much towards provoking the initiation of measures aimed at reducing loss of life during the first year. While it would be difficult to assign any specific administrative measure or medical advance solely to the influence of the statistics, these have, since the turn of the century at least, pointed the need for and, in some respects, the way to remedial and preventive action. The continued improvements in sanitation, the appointment of health visitors, the special emphasis on care of illegitimate babies, the provision of special foods for mother and child have all derived their impetus to a greater or less extent from the evidence of the statistics. So, now, the evidence highlights the importance of immaturity as the most important single factor in the loss of infant life. The present volume follows up that for 1950 in drawing attention to some of the characteristics associated with deaths of immature infants and deaths arising from other factors operating on the foetus before birth, while continuing to draw attention to the persistent differentials which exist between different parts of the country, between legitimate and illegitimate babies and between different social classes.

### Infectious Diseases

Figures for 1951 confirmed the experience of 1950 that the notifications of *food poisoning* were relatively more frequent in the areas with lowest and highest density of population than in the small and medium-sized towns. Whether this reflects variations in the completeness of notification, variations in the amount of communal feeding, or some other factor cannot be determined from the notification statistics alone.

After two successive epidemic years, *poliomyelitis* showed a comparatively low incidence in 1951. With 30 per cent of cases affecting children under 5, the age distribution continued to follow the pattern of 1949 and 1950 and the pre-war years, rather than that of 1947 when an exceptional proportion of cases related to adults. In contrast with the experience of the years 1947 to 1950, the notification rates in London and in the South-Western Region were below the average for the country.

The benefits of immunization against *diphtheria* continue to manifest themselves in declining notification and mortality rates. These benefits are perhaps most obvious when the experience of children who have been immunized is compared with that of children who have not. In 1951 there was only one death from the disease of a child recorded as immunized, representing a fatality ratio of 0.8 per cent among immunized children compared with a fatality ratio of 6.4 per cent among those who had not been immunized.

Other infectious diseases discussed are typhoid and paratyphoid fevers,



dysentery, scarlet fever, whooping cough, meningococcal infections, acute infectious encephalitis, measles and smallpox. Three of these had exceptionally high notification rates in 1951, namely, dysentery, whooping cough and measles, while the outbreak of smallpox in Brighton early in the year resulted in 10 deaths, an unusual event in recent years.

## Tuberculosis

The difficulty of determining from the available statistics whether the number of cases of respiratory tuberculosis has been increasing or decreasing in recent years and how the present situation compares with the years before the war is again emphasized. Since, moreover, males and females at various ages have fared differently, it is essential to consider each sex-age group separately. Thus, the 1951 increase in notifications in males in the age group 15–24 may reflect a further improvement in case finding or it may be a consequence of the influenza epidemic early in the year, a hypothesis which is supported by the fact that the increase was greatest in the North Western Region. In spite of the continued decline in mortality from respiratory tuberculosis, except at ages over 65, the question of what is really happening about morbidity is of increasing importance, because steps to eradicate tuberculosis from the community will be greatly facilitated by such knowledge. It is unlikely that notification and mortality statistics alone can give the answer but more intensive examination of other statistical evidence may help.

The areas of high rates of notification and mortality from respiratory tuberculosis show little change from year to year, but the table on page 162 again picks out the county boroughs with particularly high or low mortality rates. This table, for which the arbitrary rates used to define high or low mortality have had to be reduced because of the overall decline in mortality, shows numerous changes from 1950, but the names of some towns appear in both years. It remains to be seen whether towns which tend to have high rates at present can substantially and permanently improve their relative position.

## Cancer

In view of the difficulty introduced by changes of classification in studying trends of mortality from cancer, an attempt has been made to adjust all-age figures for such changes since the beginning of the century and figures for individual age-groups since 1936. Figures so adjusted for cancer of the lung, cancer of the prostate, cancer of the uterus and cancer of the breast are presented in this volume as well as aggregate figures for all other sites. The increase from *cancer of the lung* has already been extensively discussed, but a point which is brought out by the diagram on page 182 is that, since 1944, the rate of increase among women at ages over 65 has closely approximated to that among men. There are signs that the general tendency for mortality from *cancer of the prostate* to rise has been reversed in recent years in the age-group 55–64. The most marked change since 1936 in mortality from *cancer of the female breast* is in the age-group 35–44, in which there has been a definite tendency for mortality to increase. In recent years the age-group 35–44 has not continued the declining trend in mortality from *cancer of the uterus*, which was well-marked in that age group until 1948 and seems to have accelerated in other age groups since that year.

Geographical variations in mortality from cancer of the lung are further discussed on page 185 and changes in cancer mortality amongst children since 1921 on page 187.



## Diseases of the Circulatory System

Since 1946 there has been a tendency for mortality from diseases of the circulatory system as a whole to rise from the lower levels recorded during the years 1942-46. Trends within the group have been much affected by changes in classification, changes in certification practice and confusion about nomenclature. In showing those trends allowance has been made in the present volume for the change in classification introduced in 1950, but the effect of changes in certification practice cannot be assessed and there is a real need to clarify nomenclature, which is recognized in current research.

The increasing trend of mortality reported as due to coronary disease was not materially interrupted by the war and has continued since ; the other main contributor to the increase in mortality for the group as a whole is hypertensive disease.

The geographical distribution of mortality from these diseases is shown, the most notable features being the higher mortality in the towns than in the rural areas for coronary disease, myocardial degeneration (except for a very low rate in Greater London) and hypertension.

## Respiratory Diseases

Mortality from *influenza* in 1951 was four times as great as in the previous year and was much greater than in any year since 1943. Nevertheless, it was no more than the normal in years up to 1935. This comparatively low mortality in what was regarded as a severe epidemic reflects the efficacy of chemotherapy in combating some of the respiratory complications particularly in the younger age-groups, whose mortality was little affected by the epidemic. The experience of Liverpool, which suffered its highest weekly death roll since the cholera epidemic of 1849, demonstrates, however, that influenza may still be a serious menace.

Mortality from *pneumonia* and *bronchitis* shared in the upward fluctuation associated with the influenza epidemic, but it is apparent that their importance as causes of death has generally been declining in recent years. A tendency is also apparent for doctors to certify other conditions rather than bronchitis as the underlying cause of death at ages over 65, notably heart disease and pneumonia.

## Violent Deaths

Death rates from violence in 1951 were more than in any of the preceding three years ; the increase was mainly among people aged 75 and over and men aged 20-24. The increase in the latter group was due mainly to an increase in fatal road accidents which also affected most other age groups.

Deaths from *accidental poisoning* continued the rising trend which has been evident since 1944. This trend has affected deaths from household gas poisoning, but only at ages over 45, and deaths from poisoning by drugs. A detailed analysis is made of the poisons causing fatal accidents in children under 15 in the nineteen years 1931 to 1949 ; the annual number of deaths in the latter half of this period was double that in the earlier half. The age group under 5, chiefly the one-year-olds, experiences a higher risk of death from accidental poisoning by drugs than any other age-group ; yet the remedy at this age seems to be a simple matter of taking reasonable precautions with drugs which may be dangerous to children.

## Multiple Causes of Death

In the normal tabulation of mortality statistics, no account is taken of any disease which may have played a part in causing death unless it was the under-



lying cause. The form of certificate provides for such associated causes to be stated and an analysis of causes so stated in a sample of death certificates in 1951, carried out by the World Health Organization Centre for Classification of Diseases, is included in this volume (page 250).

### **International Co-operation in Population and Health Statistics**

The vital statistics of a country acquire an added importance and value when they can be compared with similar data in other countries. To secure such comparability much painstaking and careful work is now done at International Conferences and in International Committees ; this is concerned with promoting uniformity of classification, nomenclature and statistical methodology. The object of the International chapter on pages 270–281 of the present volume is to demonstrate the progress which is being made internationally in these matters. This country has always been active in furthering these efforts and is continuing to do so.

An account is given of the historical background and of the activities of the Population Commission of the United Nations from 1947 to the end of 1951.

On the medical statistics side, the volume discusses the work of the World Health Organization in relation to its Centre for Classification of Diseases (which is based on the General Register Office), its Expert Committee on Health Statistics and the World Health Assembly.

Notes on the Conference of British Commonwealth Statisticians and on visitors from abroad to the General Register Office complete this brief survey of international matters.

### **National Registration**

This introduction has been concerned so far only with vital statistics. The National Register which was created in 1939 and brought to an end in February, 1952, was intended primarily to serve administrative purposes. It did so notably in its link with food rationing—an association which proved to be of value to both the Ministry of Food and the General Register Office. But it also had its statistical uses, particularly in the production of population estimates. In addition it served a wide variety of other purposes from verifying ages on claims for Post-War Credits to locating the children born on Prince Charles's birthday. Altogether 110 million removals were recorded in the Register in the nearly twelve years of its existence which are dealt with on pages 285–292.



## POPULATION

The year 1951 saw the first census of population in the United Kingdom for twenty years, that due in 1941 having been rendered impracticable by the war, though to a very limited extent the National Register enumeration of 1939 formed a substitute. The population enumerated in England and Wales numbered 43,744,924 (21,024,187 males and 22,720,737 females), an increase of 3·8 millions since 1931. These are the provisional figures published in the Preliminary Report\* based on the enumerators' summaries, but judging by past experience they will not be appreciably modified by the final count.

The preliminary results derived from these summaries and from a sample of 1 per cent of the returns† have been used in arriving at the population estimates for 1951, and also to try to assess the extent and character of the errors in the estimates for recent years which were bound to accumulate in such a long and disturbed intercensal period.

The census has also allowed a return to the basis of the estimates which was normal before the war, when they were likewise projected forward from the last census. The data available for an estimate are bound to influence its character and content to some extent, at least at the margin. For recent years the chief sources have been the statistics of food ration books issued and those of population movement recorded in the National Register, apart from the national records of births, deaths and marriages. These statistics related in the first instance to the resident civilian population in possession of ration books and identity cards, and had to be supplemented in respect of special classes such as certain institution inmates without ration books, members of the British merchant navy, and non-civilians. The census, however, counts not the people on a certain register or in possession of certain documents, but those actually present on Census Day. It also supplies data for adjusting the numbers in local areas in respect of people away from their usual residence, provided they were enumerated in England and Wales. The balance of persons temporarily visiting over those absent from the country can only be assessed with the help of much less complete data, and only for the country as a whole. But the census is held in early Spring when such movement is at a relatively low level.

On 8th April, 1951, the number of people enumerated in England and Wales who stated that their usual residence was outside these two countries was about 108,000. Against this, the number of England and Wales residents enumerated elsewhere in the British Islands and the Irish Republic was about 36,000; the number temporarily absent from the British Islands and the Irish Republic (other than merchant seamen) may be estimated very roughly as about 20,000–30,000‡; and the number of merchant seamen similarly absent as about 60,000; together these elements amount to, say, 110,000–130,000, or a number very similar to those temporarily present here. In other words the balance of temporary

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\* *Census 1951, England and Wales, Preliminary Report* (London, H.M.S.O., 1951, 5s.)

† *Census 1951, Great Britain, One Per Cent Sample Tables* (London, H.M.S.O., 1952.—Part I, 17s. 6d., Part II, £2).

‡ This figure was estimated in conjunction with the Board of Trade on the basis of the limited information available about passenger movement. It is subject to a large margin of error, but is believed to be of the right order of magnitude.



visitors is so small in relation to the total numbers in the country that the simple count of those present may be accepted as equivalent to those resident here. (The approximation is a little less close for individual sexes or age-groups, but is still acceptable.)

In the above figures the Armed Forces have been treated as resident where stationed. This is the concept of the *Home Population*. If, on the other hand, the whole contribution of England and Wales to the British Armed Forces, whether at home or abroad, is included, and Commonwealth and Allied Forces stationed here are excluded, this gives the *Total Population*; excluding all Forces gives the *Civilian Population*. The mid-1951 estimates of these three types, by sex, are shown in Table I.

**Table I.—Estimated Population of England and Wales, Mid-1951**  
(Thousands)

			Persons	Males	Females
Total	..	..	44,008	21,255	22,753
Civilian	..	..	43,269	20,535	22,734
Home	..	..	43,800	21,049	22,751

These estimates have been built up from the numbers enumerated at the census, i.e., the home population on 8th April, 1951, as follows: First the estimated number of non-civilians included in the count was subtracted and the estimated contribution of England and Wales to the British Armed Forces at home and abroad added, thus giving the *total* population at census date. Adding the births and immigrants and subtracting the deaths and emigrants during the period to 30th June (the migration figures being derived mostly from the National Register) gave the total population at the middle of the year. From this the civilian and home population estimates could then be obtained by subtracting or adding the appropriate types of non-civilians, information about the latter being provided by the Service Departments and the Central Statistical Office.

Comparison of previous population estimates with the census is not altogether easy, because of the differences in content discussed earlier. However, using the above assessment of those differences, and assuming that the preliminary census figures represent a complete and accurate count, an estimate of the expected numbers at census date is about 150,000, or  $\frac{1}{3}$  of 1 per cent, in excess of those actually found.\* The excess is confined to the males. In view of the long and disturbed period since the previous census this result may be regarded as sufficiently satisfactory.

The approximate amount and composition of the change in the total population in the year since mid-1950, after allowing for any errors in the estimates for that date, are shown in Table II.

It will be seen that the increase of 132 thousand is almost entirely due to the excess of births over deaths, the migration balance for the year being negligible. Of the fall in the percentage rate of increase to 0.30 from the average of 0.64 for 1945–50, the greater part is accounted for by the decline in the number of

\* This figure differs from others published earlier because the information about the balance of visitors other than merchant seamen has only recently become available.



births from the exceptionally high levels in the immediate post-war years, and the remainder by the temporary rise in deaths associated with the influenza epidemic in the winter of 1950-51.

**Table II.—Analysis of Population Movement, 1950-51, and Comparison with 1945-50**

Mid-year to Mid-year	Increase or Decrease (—) in Total Population						
	Total			Births	Deaths	Natural Increase	Net Migration
	Persons	Males	Females				
1950-51 { Thousands	132	69	63	689	—566	123	9
{ Per cent	0.30	0.33	0.28	1.57	—1.29	0.28	0.02
1945-50 { Per cent	0.64	0.77	0.52	1.80	—1.16	0.64	0.00
{ per annum							

### National Sex-Age Estimates

The estimates of the national total, civilian and home populations by sex and age at mid-1951 published in Table 1 of Part I and Table A2 of Part II\* are based on the 1951 Census one per cent sample tabulations. The data were first graduated (smoothed) to correct them approximately for mis-statements of age and sampling variation, then converted from a home to a total population basis by adding the difference between the Armed Forces belonging to England and Wales and those stationed there, and finally moved on from census date to the middle of the year by the method described in previous reports. This consists of suitably ageing the numbers at the earlier date, adding the births of the intervening period at age 0 and the immigrants at the ages they would have had at mid-year and deducting the deaths and emigrants at the corresponding ages. The civilian and home populations are obtained from the total population by subtracting or adding the appropriate types of non-civilians. (Similar estimates for 31st December, 1951, are shown in Appendix A.)

Comparison of this census-based estimate with one moved on in the usual manner from the published estimate for 1950, with small adjustments to secure comparability, gives an indication of the errors in the estimates for years before 1951. It suggests that the male age-group 20-24 in 1951 would have been overstated by the pre-census estimates by about 3½ per cent, and that the remaining errors are smaller, mostly much smaller, except at ages 85 and over, where, however, the numbers in the census one per cent sample are too small to allow any accurate assessment of the estimate excess found. The published estimates for the earlier years may thus be regarded as adequate for most purposes until the final census results are available.

The average age of the population, at 34.4 years for males and 36.9 years for females, is hardly changed since 1945, and about a year higher than in 1939 for males and about a year and a half for females. But this conceals appreciable increases, compared with both dates, in the proportion of the population at both the youngest and oldest ages at the expense of those aged 15-44, especially of females, as the following figures show :

\* For the total population, see also Table III of this volume.



Sex-age Group	Per thousand of Total Population		
	1939	1945*	1951
Under 15, Males and Females ..	210	205	221
15-44 { Males .. .. .	234	228	213
{ Females .. .. .	241	232	215
45-64 { Males .. .. .	104	107	112
{ Females .. .. .	122	126	129
65 and over, Males and Females ..	89	102	110
Total .. .. .	1,000	1,000	1,000

\* The 1945 figures are subject to some degree of error, which is, however, most unlikely to affect the general picture.

Again, while the ratio of females to males in the total population, after a slight rise during the war, is back at its 1939 value of 107 per cent, in fact the excess of females is becoming more and more confined to the higher ages, as is shown by the following summary :

#### Females per 100 Males

Mid-year	All ages	Under 15	15-24	25-34	35-44	45-64	65 and over
1939	107	98	98	102	110	117	134
1951	107	96	100	101	102	115	145

The main reasons for this change are the fact that war losses in 1939-45 were much smaller than in 1914-18, and that the volume of predominantly male net emigration was much greater before the first world war than since. The rise in the sex ratio at birth and the decline in child mortality have also contributed. The increase in the excess of females at ages 65 and over is due partly to the fact that the generations most affected by the 1914-18 war losses and by the heavy emigration before 1914 have now moved into this age-group, and partly to the greater improvement in the mortality of females as compared with males.

#### National Sex-Age-Condition Estimate

The 1951 estimate of the total population by sex, age and marital condition was derived from the census one per cent sample in a similar way to that described for the sex-age estimates. It is shown in Table III.\*

Comparison with an alternative estimate, based on that for 1950 published in Table A3 for that year, showed that the apparent errors which had accumulated in this series of estimates over the years were relatively greater than in the estimates discussed in earlier paragraphs. This applies particularly to the widowed and divorced at ages under 50, where their numbers are comparatively small and, at least in the younger age-groups, the majority of them are divorced people. Data on current divorces by age of the parties have only become available since 1950, and data on the sex-age-condition distribution of migrants

\* The figures in this table differ slightly from those previously published in Table A3 at female ages 15-24.



were fragmentary for most of the period ; even between 1948 and 1951, when they were much better than before or since, they did not distinguish the widowed and divorced from other classes. This lack of adequate information, together with the war disturbance and especially the large number of divorces since the war, is probably responsible for the discrepancies now found.

Among males, the overstatement at age 20-24, already noted, applied particularly to the married, where it was of the order of 10 per cent. At age

**Table III.—Estimated Total Population by Sex, Age and Marital Condition, England and Wales, Mid-1951**  
(Thousands)

Age Group	Persons	Males				Females			
	All Conditions	All Conditions	Single	Married	Widowed and Divorced	All Conditions	Single	Married	Widowed and Divorced
0- ..	3,722	1,905	1,905	—	—	1,817	1,817	—	—
5- ..	3,187	1,631	1,631	—	—	1,556	1,556	—	—
10- ..	2,829	1,438	1,438	—	—	1,391	1,391	—	—
15- ..	2,773	1,389	1,382	7	—	1,384	1,326*	58*	—
20- ..	2,968	1,481	1,145	335	1	1,487	777*	706*	4
25- ..	3,259	1,626	569	1,049	8	1,633	355	1,260	18
30- ..	3,124	1,549	290	1,242	17	1,575	224	1,308	43
35- ..	3,325	1,638	213	1,402	23	1,687	218	1,408	61
40- ..	3,399	1,688	183	1,472	33	1,711	235	1,391	85
45- ..	3,198	1,569	151	1,380	38	1,629	248	1,270	111
50- ..	2,818	1,327	112	1,168	47	1,491	219	1,114	158
55- ..	2,436	1,096	92	945	59	1,340	206	899	235
60- ..	2,157	950	77	787	86	1,207	187	690	330
65- ..	1,821	779	66	595	118	1,042	168	491	383
70- ..	1,429	587	51	400	136	842	134	309	399
75 and over	1,563	602	49	307	246	961	156	196	609
<b>All Ages</b>	<b>44,008</b>	<b>21,255</b>	<b>9,354</b>	<b>11,089</b>	<b>812</b>	<b>22,753</b>	<b>9,217</b>	<b>11,100</b>	<b>2,436</b>

\* Revised since the publication of Table A3.

25-29 on the other hand, it was the single men who were overstated by a similar proportion, together with the widowed and divorced (for whom the proportion was much higher but the numbers small), at the expense of a deficiency in the married men of between 5 and 10 per cent. At ages over 35 single men were generally understated, the significant deficiencies being between ages 35 and 50, where they were in the 10-20 per cent range, though single men over 75 were overstated by about a quarter. The discrepancies for married men over age 35 were small, apart from an excess of about 3 per cent at age 35-39 and a little less at 40-44, but widowed and divorced men were generally overstated, especially at ages 35-39 and 45-49 (between 25 and 30 per cent) and 60-69 (between 3 and 10 per cent).

Among females, there were significant differences for the single throughout the age range 25-74 ; understatement at ages 25-29 (between 5 and 10 per cent) and 55-74 (mostly about 3 per cent), and overstatement at ages 30-54 (between 5 and 10 per cent). Among married women significant discrepancies in the estimates were confined to age-groups 65-69 and 75 and over, which were understated by about 5 and 15 per cent respectively. Widowed and divorced women, on the other hand, showed significant differences throughout, though the numbers were small under age 30. They were understated below age 50 (the deficiency declining with increasing age from 25-30 per cent at 30-39 to 10 per cent or less at 45-49), and at 60-64 and 70-74 (about 5 per cent), and overstated at 50-59, 65-69 and 75 and over (errors of the order of 5 per cent, but generally somewhat below that figure).



Provisional adjustments to the estimates for 1946–50 in the light of the above were incorporated in Table IV of the Civil Text volume for those years.

The proportion married rose between 1939 and 1951 from 48 to 52 per cent among males and from 45 to 49 per cent among females. The increases are, of course, most marked at the younger ages, where most of the people married in recent years are to be found. In the age-group 25–29, for example, the proportions married have risen from 54 to 65 per cent among males and from 65 to 77 per cent among females. In fact not only has a greater proportion of people been getting married, but they have also been marrying younger. One consequence has been a decline in the proportion of females to males in the unmarried population (the single, widowed and divorced) in all age-groups between 20 and 55. These matters are discussed in more detail on pages 62–70 below.

### **Estimates of Married Women by Duration of Marriage**

It has been customary to include in the Text Volume estimates of the mean number of married women exposed to risk of child bearing by separate years of duration of marriage as well as by age. Such estimates for each year from 1938 to 1945 were given in Appendix I of the Civil Text for 1940–45 and from 1946 to 1950 in Appendix II of the Civil Text for 1946–50. The similar estimates for 1951 are given in Appendix B of the present volume.

A full revision of the series from the 1951 Census one per cent sample tabulations has been prevented by the relatively large sampling errors liable to occur in such a detailed subdivision of the data. The 1951 estimates were therefore prepared from the previous year's estimates in the normal manner but in addition, for consistency, the estimates were subsequently adjusted to produce all durations totals agreeing with the marital condition estimates for 1951 shown in Table III. No revision of previous estimates has been attempted at this stage.

### **Local Populations**

Estimates of the home populations of all boroughs, urban and rural districts in England and Wales as at the middle of 1951 are shown in Table 12 of Part I and Table E of Part II. The Appendix to Part II gives details of changes in boundary during the year; this is the first time since the war that they have been other than trivial.

The 1951 estimates are based on the preliminary results of the census. They therefore differ slightly in character from those for the immediately preceding years, in the way described on page 9 above. They also differ from the figures published in the Preliminary Report on the census, since the latter relate to the enumerated and the estimates relate to the resident population.

The numbers enumerated in each area at census date were first converted to the numbers resident by adding those enumerated elsewhere in England and Wales who had stated as their usual residence an address in the area concerned, subtracting those enumerated in the area who had stated a usual residence address elsewhere in England and Wales,\* and making some special adjustments. These last related to certain classes of the population absent from their usual residence as defined for census purposes but from only part of whom statements to that effect had been obtained on the census schedules.

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\* Persons with a usual residence outside England and Wales were thus, as in 1931, allocated to the area of enumeration. This is not only consistent with the procedure adopted for the national estimates, but also reflects the fact that areas where this element is numerically important are usually those permanently characterized by a considerable floating population of such visitors.



The most important of these were members of residential schools and colleges absent on holiday, for whom the school or college address should have been given as that of usual residence, though in many cases the home address must have been given instead, and members of the Forces on leave from their stations, to whom the same applied (occasionally larger numbers were absent from their stations on manœuvres or at sea, in which case no usual residence statement would have been obtained on the schedules). These elements can be of importance, especially in some rural areas where the school or service establishment accounts for an appreciable part of the local population.

The resident (home) population at the middle of the year was obtained from that at census date (8th April) by, in effect, adding the net population movement recorded in the National Register, allowing for any known changes in locally stationed Armed Forces in the intervening period, and adjusting the results to agree with the independently calculated aggregate for the whole country.

In an attempt to assess the quality of the estimates for previous years a set of such estimates as at census date was derived from those for mid-1950, mostly by using the National Register statistics of movement for the intervening period, and was compared with the preliminary census results, after adjusting for the difference between resident and enumerated population. As explained earlier such a comparison cannot be exact, because of the differences in data, coverage and definitions, but is nevertheless helpful. Table IV shows the distribution of percentage differences between the census population and that expected on the basis of previous estimates. It may be compared with the similar comparison made after the 1931 Census and discussed in the Text volume of the Statistical Review for 1930 (pages 100–102).\*

It will be seen that the larger percentage errors are relatively more frequent in the smaller areas. Of the 1,470 areas in the table, 197, or 13·4 per cent, had an estimate error of 3 per cent or more, and of these only 7 were urban areas with a population of 50,000 or more (3·9 per cent of such areas).† The table also shows that over-estimation was relatively more frequent for urban areas (the more so the larger the area) and under-estimation more frequent for rural ones. The last point represents to some extent a reversal of the relationship found in 1931, especially for rural areas.

Further analysis of the kind of areas where large errors arose, and for what reasons, must take account of the estimate methods used, and the data available, before the 1951 Census. These were described in the Civil Text volume for 1946–50. Briefly, the main data were the annual statistics of food ration books issued and the National Register statistics of local population movement between one mid-year estimate date and the next. These were supplemented by returns of the numbers of electors, some data about the number of people in residential schools and other institutions with special reference to the proportion included in the local ration book issue figures, Service Department returns of the number of non-civilians stationed in each area, and a few other items. All were subject to various imperfections, but the most important point was

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\* The 1931 table shows many more large errors than that for 1951. Part of this is no doubt due to the fact that in recent years the data available for these estimates have (temporarily) been much better than before the war. But another part is due to the type of comparison reflected by the 1931 table ; the accompanying text shows that a comparison strictly like that in Table IV would have yielded rather smaller discrepancies.

† In Table IV, unlike the remainder of this volume, areas in conurbations (see page xi) have been counted with those of the same size class in the remainder of the country. The errors for each of the six conurbations taken as a whole were less than  $\frac{1}{2}$  per cent, except for Greater London (+1·1 per cent).



Table IV.—Distribution of Percentage Differences between Actual and Expected 1951 Census Populations, Administrative Areas in England and Wales<sup>1</sup>

Type of Area	Estimate <i>less than</i> Census by percentage shown												All areas	Estimate <i>greater than</i> Census by percentage shown											
	10+	9-	8-	7-	6-	5-	4-	3-	2-	1-	0-	Total		Total	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	10+
Urban, with population: 100,000 and over 50,000-100,000 under 50,000.. Rural ...													78	61	45	12	2								
													102	73	43	22	4								
	1 <sup>2</sup>							1	2	1	14	17	813	449	247	91	53	1	13	5	6	1	2	3 <sup>3</sup>	
	4 <sup>4</sup>	2	1	4	6	13	13	23	48	90	100	304	477	173	87	44	22	2	1	2				1 <sup>5</sup>	
Total ..	5	2	3	5	6	18	34	40	78	197	326	714	1,470	756	422	169	81	11	15	7	4	2		4	

<sup>1</sup> The table excludes Newcastle-upon-Tyne Moot Hall and precincts and Nottingham Shire Hall, both with an enumerated population at the 1951 Census of 2.

<sup>2</sup> 13- per cent.    <sup>3</sup> 1 each of 16-, 14- and 11- per cent.    <sup>4</sup> 1 each of 18-, 17-, 15- and 10- per cent.    <sup>5</sup> 20- per cent.



Table V.—Causes of Differences exceeding 3 per cent between Actual and Expected 1951 Census Populations, Administrative Areas in England and Wales

Apparent Major Source of Error in Estimate of Expected Census Population	Estimate <i>less than</i> Census by percentage shown								All Areas	Estimate <i>greater than</i> Census by percentage shown										
	Estimate <i>less than</i> Census by percentage shown									Estimate <i>greater than</i> Census by percentage shown										
	10+	9-	8-	7-	6-	5-	4-	3-		Total	Total	3-	4-	5-	6-	7-	8-	9-	10+	
Subdivision of Food Group .. .. .	1 <sup>4</sup>	1	1	3	4	6	11	15	42	94	52	21	9	10	4	4	4	3	1	
Ration Books <sup>1</sup> .. .. .	1 <sup>5</sup>			1	1	4	6	8	21	31	10	5	2						1	1 <sup>6</sup>
Subdivision of Food Group <i>and</i> Ration Books <sup>1 2</sup>	1 <sup>7</sup>	1		1	1	2	5	8	19	32	13	5		3		3	1			1 <sup>8</sup>
Residential Schools and other Institutions ..						1	3		4	4	—									
do. <i>and</i> Group Subdivision <i>and/or</i> Ration Books <sup>1</sup> .. .. .																				
Misallocation of Non-civilians .. .. .			2		3	5	1	6	16	18	2	2								
do. <i>and</i> Group Subdivision <i>and/or</i> Ration Books <sup>1</sup> .. .. .								1	2	3	1									1 <sup>9</sup>
Visitors from outside England and Wales, Merchant Seamen, Fishermen without Ration Books <sup>3</sup> .. .. .	2 <sup>10</sup>					2	1		5	7	2			1						1 <sup>11</sup>
Total .. .. .	5	2	3	5	6	18	34	40	113	197	84	34	11	15	7	4	2	4		4

<sup>1</sup> Includes residual errors. <sup>2</sup> Includes 2 areas where National Register movement statistics were also at fault. <sup>3</sup> Of which 7 also with Ration Book (and/or residual) errors, including 1 area where National Register movement statistics and 1 where Group Subdivision were also at fault. <sup>4</sup> 17- per cent. <sup>5</sup> 13- per cent. <sup>6</sup> 14- per cent. <sup>7</sup> 10- per cent. <sup>8</sup> 11- per cent. <sup>9</sup> 20- per cent. <sup>10</sup> 1 each of 18- and 15- per cent. <sup>11</sup> 16- per cent.



that many of the ration book figures related to groups of two or more areas having a joint Food Office, so that it was necessary to estimate first the population of the group and then divide it into those of the component areas. All the estimates were made in the first place for the civilian resident population, and then the non-civilians stationed in each area were added to give the home population.

The 197 estimates in Table IV differing from the census figure by 3 per cent or more were investigated in some detail, in an effort to trace and analyse the sources of error. The results are summarized in Table V.

The leading source of error is easily the difficulty of sub-dividing food groups of areas, which by itself accounts for about half the cases in the table and contributes to nearly another quarter. The next most important weakness was in the ration book statistics, accounting for about 15 per cent of cases on its own and contributing to about another quarter of them; but this category also includes residual errors to which no specific cause could be assigned. Then follow cases of inadequate information about residential schools and other institutions, accounting for 2 per cent entirely and contributing to another 9 per cent. Next came those where information was insufficient about non-civilians, usually about their precise location with regard to local government boundaries; about  $1\frac{1}{2}$  per cent of the errors investigated were entirely due to this and another  $3\frac{1}{2}$  per cent partly so. This group includes some of the larger errors, including the largest of all, +20 per cent. Finally there is a small group of areas (4 per cent) where accurate estimation was made difficult by the presence in exceptional numbers of visitors from outside the country, merchant seamen and fishermen without ration books; usually such cases (the worst of which are three of London's Metropolitan Boroughs) also showed weakness in the ration book figures.

To sum up, with the data and the conditions prevailing just before the 1951 Census large percentage errors in local population estimates tended to be concentrated in rural or small urban areas, especially if grouped with others for Food Office purposes, and areas with important special population elements such as non-civilians, residential institutions or visitors from abroad.

### Local Age Distributions

Estimates of the home population by sex and age in Standard Regions, Conurbations and Density Aggregates are shown in Tables 2 and A4. Those for 1951 have been derived in the main from the count of the National Register as at the end of 1947 in the way described in the Civil Text volume for 1946-50. The figures were compared with others based on the 1951 Census 1 per cent Sample, and some adjustments were made, but the discrepancies were on the whole very moderate in size; the sample cells were too small, and hence the chance variations in the sample data too large, to allow the substitution of a complete set of estimates based on them for that made from the earlier data.

The changes in the regional population structure since before the war were discussed in the 1946-50 Civil Text.

Since 1950 the figures in the table have related to Standard Regions and to the six major Conurbations as defined on page xi above, instead of the Geographical Regions used by the General Register Office since 1931, and to a new type of Density Aggregate based on international recommendations in place of the old grouping of Greater London, and outside it, County Boroughs, Municipal Boroughs and Urban Districts, and Rural Districts. The new division is between the Conurbations and, outside them, urban areas with a 1951 Census population of 100,000 or more, 50,000 to 100,000 and under 50,000, and rural areas.

**Estimates of the number of children under 15 years of age at mid-1951** in each administrative area (borough or county district), based on preliminary census data, were published, together with the population of all ages, in the annual population pamphlet.\*

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\* *The Registrar General's Estimates of the Population of England and Wales. Populations of each Administrative Area at 30th June, 1951.* London, H.M.S.O., 1952, 6d. net.



## BIRTHS, FERTILITY AND REPRODUCTIVITY

### Live Births

The number of live births occurring in 1951 numbered 677,529, compared with 697,097 in 1950. Until 1938, statistics of birth registrations only were available but in most years the numbers of occurrences and of registrations were not different for all practical purposes and the registrations of 1938, numbering 621,204, may be compared with the occurrences of 1950 and 1951 without straining comparability. The births of 1951 represented a rate per 1,000 population of all ages of 15·4, compared with 15·8 in 1950 and 15·1 in 1938. (Tables B and C of Part II.) The similarity of these three rates gives no hint of the broad fluctuations through which the rate passed in the intervening years, but these were associated with the war, and have been discussed in detail in the Civil Texts of 1940–45 and 1946–50. It need be recorded only that the rate rose to a peak at 20·5 in 1947, declining sharply at first to 17·8 in 1948, and then more slowly to 16·7 in 1949, 15·8 in 1950 and 15·4 in 1951. The violent fluctuations associated with the war have therefore passed, and the rate is now subject to only very slow movement.

A similar situation exists in many other countries, as is shown by Table Q of Part II, which compares the rates of European and some other countries during the last thirty years. The figures up to 1948 are discussed in more detail in the Civil Text volume for 1940–45.

In 1951, as in 1939, England and Wales had the lowest birth rate but one of all the countries in the table, Austria having the lowest in 1951 and France the lowest in 1939. But, as will be shown later in this chapter, a much more detailed analysis than that of crude birth rates is needed for a true appreciation and comparison of current fertility trends and levels.

### Birth Rates per 1,000 Women aged 15–44

Relating births to the total population, though convenient and conventional may be misleading since only a fraction of the population are capable of child-bearing. It seems appropriate to relate them to the childbearing component of the population, for this purpose assumed to be composed of women of ages 15–44. Since the proportion of these women in the total population has been decreasing for many years, the crude birth rate has been increasingly deflated by the inclusion in the denominator of a growing proportion of the population not at risk of childbearing. Removing this number and relating the births only to women of fertile ages produces therefore a rate which declines less steeply than the crude birth rate from 1921, and rises more rapidly after the lowest level is reached.

Table VI gives live birth rates per 1,000 women aged 15–44 (Table C, Part II) and the ratios of these rates to that of 1938. In census years from 1881 the ratio standardized for age is also shown, i.e. after correcting for changes in age structure of women *within* the age group 15–44, though this is an unimportant correction and has little effect on the ratios.

In the left-hand side of the table, giving rates for the average of 3 years round each census year since 1841, the highest rate is associated with 1871 and is no less than two and a half times that of 1938. The rates then decline to 1931, when the rate was substantially the same as that of 1938.

**Table VI.—Live Birth Rates per 1,000 Women aged 15–44, 1841 to 1952, England and Wales**

Year	Live Births per 1,000 women aged 15-44	Ratio to 1938 (taken as 100)		Year	Live Births per 1,000 women aged 15-44	Ratio to 1938 (taken as 100)		
		Direct (Unstan- dardized)	Standard- ized for age					
Long Range (3-year averages)				Individual Years or Annual Average				
1841	..	148.3	238	—	1938	..	62.2	100
1851	..	149.8	241	—	1939-49	..	71.5	115
1861	..	151.1	243	—				
1871	..	155.7	250	—	1946	..	83.3	134
1881	..	147.7	238	235	1947	..	90.6	146
1891	..	129.8	209	205	1948	..	80.2	129
1901	..	114.8	185	179	1949	..	76.0	122
1911	..	98.3	158	155	1950	..	73.0	117
1921	..	90.9	146	147	1951	..	71.5	115
1931	..	64.3	104	102	1952*	..	71.7	115
1951*	..	72.1	116	117				

\* Provisional.

After 1931 the rate declined to a minimum of 59.4 in 1933, or 95 per cent of the 1938 rate, and then rose slightly to 62.2 in 1938. The rise from 1935 to 1938 was itself insignificant, but that the rate should have remained so nearly constant for almost a decennium from 1931 to 1938, after a steep decline prolonged for no less than 60 years, was highly significant. From the figures shown in Table VI above, it would appear that the decline was first arrested in the decennium 1911–21 but in fact this was due to the exceptionally high rate in 1921 after the disturbance of the first world war—the making good of postponed births. The underlying trend was still downward.

The intervention of the second world war in 1939 produced fluctuations in the rate which temporarily obscured the trend, but it is now possible to minimize this disturbance by aggregating the experience of the war and post-war years to yield an average rate of 71.5 for the period 1939–49 as a whole, or 15 per cent higher than the 1938 rate. The rate for 1950 was very slightly higher than this at 73.0 but the 1951 rate and the provisional rate for 1952, at 71.5 and 71.7 substantially reproduce the 1939–49 average.

This evidence suggests that the fertility disturbances associated with the second world war have passed; that the long decline up to the early thirties has not continued, indeed the average rate since 1938 shows an improvement on that of the previous decade; and though small chance variations from year to year are occurring and are only to be expected there is no sign at present of a significant downward trend.

Thus the study of crude birth rates by neglecting to take account of the declining proportion of the population represented by women at the reproductive ages, suggested that current experience was similar to that of pre-war years and masked a real rise in fertility (when births are related to women of reproductive ages). As between 1938 and 1951 the increase in the rate on this basis was 15 per cent.

### Age Standardization

A further refinement may be introduced into the analysis by recognizing that the fertility of women varies with age between 15 and 45. Since only a small



proportion are married the birth rate of girls under 20 is low, but otherwise the rates are higher at younger than at older ages. The ageing of the population has added weight to the older groups and tends to reduce the average fertility of the age-group 15-44 taken as a whole.

The left-hand section of Table VI, giving 3-year averages around census years, shows both unstandardized and standardized ratios of the rate to that of 1938. In 1881 the effect of this standardization was to reduce the ratio from 238 to 235 and, in 1931 from 104 to 102. In 1951, however, the effect was to increase the ratio, from 116 to 117. Thus the improvement from 1931 to 1951 is only 12 per cent as shown by the unstandardized ratio, but 15 per cent as shown by the standardized ratio. Nevertheless as has already been remarked the general trend of the fertility rates is hardly affected to any significant extent by age standardization.

### Reproduction Rates

The rapid fall in the birth rate from 1871 gave rise in pre-war years to expressions of fear in some quarters that a catastrophic decline in the population would eventually ensue.

These fears were indeed exaggerated, but they served to stimulate closer study of the problem of a declining population and to awaken public interest. There was general recognition of the need for further essential statistical information from which the true nature of current population changes might be better ascertained. The Population (Statistics) Act was passed in 1938 to increase the scope of registration statistics, and in 1944 a Royal Commission on Population was appointed "to examine the facts relating to the present population trends in Great Britain; to investigate the causes of these trends and to consider their probable consequences; to consider what measures, if any, should be taken in the national interest to influence the future trend of population; and to make recommendations." There had been no population census since 1931 and no census fertility enquiry since 1911 and so the Commission found it necessary to conduct a sample Family Census in 1946 from which valuable information was obtained.

The investigations carried out during this period of widespread public interest were directed to ascertaining whether the births currently occurring were sufficient to ensure the maintenance of the population either at its present level or at some other suitable level selected on the basis of economic or other considerations. It was natural that these investigations should have sharpened interest in the notion of a single figure index—the reproduction rate—expressing the sufficiency of births for population maintenance. Ignoring migration it is clear that unless in the long run deaths are replaced by births the size of the population must change; and attention became focused upon replacement. The concept of replacement had been developed to the more specific point of considering whether a generation of women in passing through the reproductive years of life might bear sufficient female babies to replace themselves and thus to enable the same cycle of replacement to continue. (The same concept can of course be applied to the replacement of the male, as the other partner in procreation, by thinking in terms of fathers and male babies.)

The simplest index is obtained by calculating fertility rates based on female births at each age (in practice in quinary groups) within the reproductive range and adding these together to estimate the average number of female babies born to women passing through the reproductive ages if they experience these fertility rates—this is the Gross Reproduction Rate (G.R.R.). Such a rate

fails to take account of the mortality of infants before they themselves become the parents they are supposed to replace, and, therefore, before the rates for each age group are added together they should each be multiplied by the appropriate proportion of infants surviving to that age group on the basis of current mortality experience—this yields the Net Reproduction Rate (N.R.R.). If forecast mortality is employed to allow for improvement in survivorship in the successive generations the rate becomes an Effective Reproduction Rate.

These reproduction rates suffer from a number of statistical defects but there is an overriding difficulty of interpretation which has tended to bring them into disrepute. Exact replacement is indicated only if rates of unity are consistently yielded and if the assumed conditions of mortality and age variations in fertility are reproduced in the future. In turn this involves other assumptions of stability in marriage experience, in the sex ratio at birth and birth spacing. These conditions are never fulfilled. The rate measures the experience of a single calendar year and even a series of rates indicates only past trends and gives no reliable guide to the future in which rapid changes in conditions might take place. The rates are therefore likely to undergo fluctuation from year to year, and even movement persisting over a period of years, without providing a sure guide to ultimate population growth.

Other approaches have been made to the problem of assessing replacement by measuring family sizes attained at different durations of marriage for couples married at different times in the past, or by calculating the ratio of successive generations, but these are retrospective measurements of past fertility in which current experience carries little weight.

With all these defects the reproduction rates, while not indicating the future population growth, do give a broad indication of the adequacy of current births to support the population and it is possible to speak of the births of a particular year being above replacement level if the reproduction rate exceeds unity.

At the current low level of mortality reached in England and Wales, the difference between the Net and the Effective Reproduction Rate is relatively unimportant especially since, as we have seen, neither index is above reproach. Furthermore, the N.R.R. has the virtue of international comparability since it is calculated for a wide range of other countries.

Gross and Net Reproduction Rates for England and Wales are shown in Table VII.\*

These rates have very much the same properties as annual birth rates, and are best considered as such. The G.R.R. is superior to a crude birth rate since it relates births to the section of the population conventionally taken as responsible for them. Birth rates per 1,000 women aged 15–44, employed above, also possess this superiority, but the G.R.R. has a further advantage in that it is age standardized. The N.R.R. has both these properties, and in addition it incorporates an allowance for the wastage of mortality between birth and prospective motherhood.

The G.R.R. in 1841 was 2.237 and nearly 150 per cent above that of 1938. The close agreement between this excess and that shown in Table VI will be noted. The rate at that time was rising slowly and, after passing a peak in 1871, commenced a long decline not arrested until after 1931, by which year it had fallen to 0.922. Between 1931 and 1938 there was little movement in the

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\* These are based on fertility rates of girl-babies per woman. It is hoped at some future date to attempt the construction of the complementary reproduction rates based on boy-babies per man.



Table VII.—Gross and Net Reproduction Rates, 1841 to 1951, England and Wales

Year	Reproduction Rates		Ratio to rate of 1938		Ratio of N.R.R. to G.R.R.	Year	Reproduction Rates		Ratio to rate of 1938		Ratio of N.R.R. to G.R.R.
	G.R.R.	N.R.R.	G.R.R.	N.R.R.			G.R.R.	N.R.R.	G.R.R.	N.R.R.	
3-year Averages						Single years					
1841 ..	2.237	1.349	2.494	1.676	0.603	1938	0.897	0.805	1.000	1.000	0.897
1851 ..	2.264	1.381	2.524	1.716	0.610	1939	0.892	0.807	0.994	1.002	0.905
1861 ..	2.277	1.427	2.538	1.773	0.627	1940	0.850	0.753	0.948	0.935	0.886
1871 ..	2.356	1.511	2.627	1.877	0.641	1941	0.836	0.737	0.932	0.916	0.882
1881 ..	2.252	1.511	2.511	1.877	0.671	1942	0.934	0.845	1.041	1.050	0.905
1891 ..	1.973	1.369	2.200	1.701	0.694	1943	0.985	0.893	1.098	1.109	0.907
1901 ..	1.702	1.238	1.897	1.538	0.727	1944	1.089	0.993	1.214	1.234	0.912
Single Years						1945	0.992	0.910	1.106	1.130	0.917
1911 ..	1.424	1.118	1.588	1.389	0.785	1946	1.200	1.112	1.338	1.381	0.927
1922*..	1.189	0.991	1.326	1.231	0.833	1947	1.307	1.214	1.457	1.508	0.929
1931 ..	0.922	0.801	1.028	0.995	0.869	1948	1.158	1.089	1.291	1.353	0.940
						1949	1.098	1.037	1.224	1.288	0.944
						1950	1.062	1.010	1.184	1.255	0.951
						1951	1.044	0.996	1.164	1.237	0.954

\* 1922 has been selected since, as the aftermath of the First World War, conditions in 1921 were abnormal,

rate. The G.R.R. fluctuated widely in the next 11 years, as did more conventional birth rates, its average for the period 1939–49 being 1.031. Its value in 1950 was 1.062 and in 1951 was 1.044, suggesting the approach of relative stability as war disturbances receded.

The introduction of the mortality element in the N.R.R. throws more light on the long term changes. The N.R.R. in 1841 was 1.349, little more than one half of the G.R.R. and only 68 per cent above the 1938 rate, showing that the contemporary high mortality losses between birth and attainment of reproductive ages were such that a much higher birth rate was required to replace the mothers of that time than was required in 1938. After 1841 the N.R.R. followed a course similar to that of the G.R.R., but with the rate of decline much retarded by the improving mortality. By 1931 the N.R.R. had fallen to 0.801, and in 1938 it was not significantly different at 0.805. The average N.R.R. for 1939–49 during which war disturbances occurred in the rate was 0.945. In 1950 the rate was 1.010 and, in 1951, 0.996.

It is interesting to note the effect of mortality improvement since 1938. The average G.R.R. for 1939–49 was .15 per cent above 1938 whilst the average N.R.R. was 17 per cent. above 1938. In recent years the disparity has been even greater. In 1950 the G.R.R. was 18 per cent above the 1938 level and the N.R.R. 25 per cent above. In 1951 the percentages were 16 per cent and 24 per cent respectively. Thus, in addition to the improvement in fertility rates since 1938 (shown by the G.R.R.), the value of current girl-births as potential mothers is better by half as much again as a result of reduction in the mortality wastage between birth and reproductive ages.

The last column in each half of Table VII shows the ratio of the N.R.R. to the G.R.R., an index of the changes in mortality wastage discussed above. In 1841 nearly 40 per cent of the reproductive potential of girls was lost by their premature death. By the turn of the century, that is, 60 years later, the loss was over 25 per cent. In the next 30 years, the loss was halved, falling from over 25 per cent to under 15. By 1938 the loss had been brought even lower to 10 per cent. Notwithstanding the plausibility of arguments concerning the “hard-core of unpreventable mortality,” and in spite of the low level of mortality already attained by 1938, still further improvement in the following 13 years halved the losses again to under 5 per cent in 1951. Without resort to pessimism regarding future medical advances, it can be seen that further gains

from mortality can be but slight, since the losses which can be removed are so small. Were mortality to be entirely eradicated in women under 45, the relative gain to the N.R.R. would only be 5 per cent. Thus, whilst the mortality gains in the last hundred years have contributed much to maintaining replacement, little help can be expected in the future from this source, and another decline in fertility rates, such as that in the early years of this century could not take place without causing a decline in the N.R.R. to a level substantially below par. However, the fertility decline from the post-war peak has been shown to have been virtually arrested with the N.R.R. in the region of unity, and it remains for the records of the next few years to reveal the true post-war trend. Minor fluctuations from year to year are only to be expected and far-reaching conclusions may not be drawn from such variations.

It should be borne in mind that fertility indices however statistically refined are only measures of results and reveal nothing of causes. For fertility is affected by many social, economic, and physiological factors the nature of which is not fully revealed by registration statistics even though these statistics measure their effects.

### Tabulation Design

Owing to the complexity of tabulations involving identification of legitimacy, age of mother, duration of marriage, number of previous children and various combinations of those factors, it has not been deemed feasible to provide completely parallel classifications of both births and maternities. The course followed has been to provide full analyses by the two factors of legitimacy and mother's age for both births and maternities (Part II, Tables AA to HH and YY), but to restrict the analyses in the main to maternities for legitimate fertility tabulations involving duration of marriage or number of previous children (Tables II to SS). Maternities are slightly greater in number than the corresponding number of live births (stillbirths included in the former being in excess of the plural births excluded), but the excess is small and the maternity tabulations can be converted to live birth tabulations with sufficient accuracy for most purposes by the application of the appropriate live birth-maternity ratios. Such ratios for 1938 to 1945 were shown in the 1940-45 Civil Text in Table XXXII on page 76, for 1946 to 1950 in the 1946-50 Civil Text in Table XLVII on page 88, and for 1951 are shown below in Table VIII.

**Table VIII.—Ratio of Legitimate Live Births to Legitimate Maternities by Mother's Age at Maternity, 1951, England and Wales**

Calendar year	Mother's Age at Maternity						
	All ages	Under 20	20—	25—	30—	35—	40 & over
1951.. ..	0.990	0.987	0.992	0.994	0.993	0.985	0.962

A further difficulty encountered in endeavouring to follow the course of legitimate fertility arises from the fact that the records of successive years have been subject to varying degrees of incompleteness through the occasional failure to obtain at birth registration a record of the mother's age, her duration of marriage, or the number of her previous children. The proportion of "not stated" cases of various types in the records for the year 1938, the first of the series, and for the years 1945 to 1951 are given in Table IX.



**Table IX.—“Not Stated” cases per 10,000 Total Legitimate Maternities 1938 and 1945 to 1951, England and Wales**

Type of information not stated	1938	1945	1946	1947	1948	1949	1950	1951
Age only .. ..	21	20	20	19	17	19	18	16
Age and duration .. ..	5	3	3	3	2	2	2	2
Age and children .. ..	—	—	—	—	—	—	—	—
Age, duration and children ..	25	11	10	13	8	6	6	6
Duration only .. ..	89	40	41	34	27	22	20	24
Children only .. ..	44	32	25	30	27	24	20	19
Duration and children ..	7	6	7	3	3	4	3	3
<b>Total, all types ..</b>	<b>190</b>	<b>112</b>	<b>106</b>	<b>102</b>	<b>84</b>	<b>77</b>	<b>70</b>	<b>70</b>
All age types .. ..	51	34	33	35	27	28	26	24
All duration types .. ..	125	60	61	53	39	34	31	35
All children types .. ..	76	50	42	46	38	34	29	28

In 1938, the first year of the operation of the Population (Statistics) Act, the additional information required by that Act was deficient in one form or another in 1·9 per cent of total legitimate registrations, but by 1951 the deficiency had fallen to 0·7 per cent. The date of marriage, from which the duration of marriage is obtained, has been the most frequent item of information omitted but such omissions have become much less frequent of recent years, falling from 125 per 10,000 legitimate maternities in 1938 to only 35 per 10,000 in 1951.

The number of previous children was omitted for 76 per 10,000 legitimate maternities in 1938, but the proportion had fallen to 28 in 1951. The frequency of omission of mother's age was 51 per 10,000 in 1938, but only 24 in 1951.

The usual practice of identifying the “not stated” items in the published tables of the annual Parts II has been continued in 1951.

There is no reason to suppose that the omissions were generally intentional or prejudiced and therefore it is justifiable to produce tables incorporating a proportional distribution of the “not stated” amongst the “stated” cases as being from the user's point of view, the more convenient form of presentation. It would not be practicable to treat all the analyses in this manner but Table SS which deals with the three fertility characteristics, mother's age, duration of marriage and number of previous children in combination, has been selected for an orderly distribution of the “not stated” cases, omissions of each type being dealt with separately, thus providing “Controls” to which any of the other tables can be adjusted as required. Table SS for 1951 thus modified is shown in Appendix B, Table 6. Comparable tables for 1938 to 1945 were published in the 1940–45 Civil Text in Appendix I, Table VI, on pages 176 to 191, and for 1946 to 1950 in the 1946–50 Civil Text in Appendix II, Table 7, on pages 200–209.

### **Illegitimate Births and Pre-marital Conceptions**

Of the 677,529 live births which occurred in 1951, 32,771 or 4·8 per cent, were registered as illegitimate compared with 6·6, 5·3, 5·4, 5·1 and 5·1 per cent in the individual post-war years from 1946 to 1950, an average of 6·2 per cent over the war period 1939–45, and 4·2, 4·1, 4·2 and 4·2 per cent in the pre-war years from 1935 to 1938. It is thus seen that the proportion of births that were illegitimate

which was stable before the war, rose during the war to some 50 per cent above the pre-war level. Since the war the proportion has declined, but in 1951 it was still 14 per cent above the pre-war figure.

In terms of the numbers of single, widowed and divorced women aged 15 to 44 in the population, the illegitimate birth rates, which had fallen from over 18 per 1,000 related women in the middle of the nineteenth century to 8.4 in 1901-05 and 5.5 in 1931-35, rose from the outbreak of war to a peak of 16.1 in 1945. It has declined since to 10.3 in 1950 and 9.8 in 1951. Expressed in this form, the incidence of illegitimacy in 1951 was nearly 80 per cent above that of pre-war years. The reason for the wide discrepancy between the courses of these two alternative measures is that the high marriage rates of recent years have depleted the population of the non-married. The incidence of illegitimate births relative to legitimate births should therefore have fallen sharply, and that it has not done so implies a much increased rate of illegitimate births per 1,000 non-married women. The choice of measure has to be decided on grounds of convenience. Neither can be strictly justified since illegitimacy is not necessarily geared to legitimate fertility or related to *all* non-married women.

The numbers of illegitimate births registered from 1851 are published in Table B of Part II and rates in Table C.

Attention has been drawn in previous commentaries on the subject—in the 1940-45 Civil Text on pages 78-83 and the 1946-50 Civil Text on pages 89-93—to the fact that legitimate but pre-maritally conceived births and illegitimate births are complementary from the aspect of extra-marital sexual behaviour,

**Table X.—Illegitimate Maternities and Pre-maritally conceived legitimate maternities, 1938 to 1951, England and Wales**

Year	Illegitimate maternities	Pre-maritally conceived legitimate maternities	Total maternities conceived extra-maritally		Percentage of extra-maritally conceived maternities legitimated by marriage of parents before birth of child
			Numbers	Per cent of all maternities	
1	2	3	4	5	6
1938 ..	28,160	66,221	94,381	14.6	70.2
1939 ..	26,569	60,346	86,915	13.8	69.4
1940 ..	26,574	56,644	83,218	13.7	68.1
1941 ..	32,179	43,362	75,541	12.7	57.4
1942 ..	37,597	40,705	78,302	11.8	52.0
1943 ..	44,881	37,271	82,152	11.8	45.4
1944 ..	56,477	37,746	94,223	12.3	40.1
1945 ..	64,743	38,176	102,919	14.9	37.1
1946 ..	55,138	43,488	98,626	11.8	44.1
1947 ..	47,491	59,633	107,124	12.0	55.7
1948 ..	42,402	62,304	104,706	13.4	59.5
1949 ..	37,554	59,185	96,739	13.1	61.2
1950 ..	35,816	54,188	90,004	12.8	60.2
1951 ..	33,444	50,477	83,921	12.3	60.1



and should be considered together. Tabulations of legitimate births by duration of marriage are not made, but tabulations of maternities are and provide an equally good medium for analysis for this purpose. The number of maternities occurring within 8½ months of marriage is taken to indicate the number premaritally conceived, on the grounds that the number of post-maritally conceived maternities occurring within 8½ months of marriage thus wrongly included will balance with the number of pre-maritally conceived maternities occurring after 8½ months which are wrongly excluded.

Table X shows the numbers of illegitimate and pre-maritally conceived maternities for each year from 1938 (when tabulations by duration of marriage were first made) to 1951.

It has been pointed out in previous commentaries that, as the incidence of illegitimate maternities increased at the onset of war (shown in column (2) of the table), the incidence of pre-maritally conceived legitimate maternities decreased (shown in column (3) ), and the sum of the two (shown in column (4) ) suffered far less fluctuation than either of its components. The explanation that has been advanced to account for these complementary changes, namely the apparent shift of a substantial number of pre-maritally conceived maternities from the legitimate to the illegitimate category, during war and immediate post-war years, is that physical separation and other disturbances of the war prevented or militated against the marriage of the couple after conception but before the birth. It seemed reasonable to expect that, when the war-time conditions passed, a return would be made to the pre-war pattern. From column (6), which shows the proportion of extra-marital conceptions followed by the marriage of the parents before the birth of the child, it may be seen that the proportion was steady at 70 per cent before the war, and that after the war-time disturbance had passed it settled in 1948 at 60 per cent. This decline is not evenly spread over all ages, as may be seen from the following statement showing the proportions (per cent) in each age group in 1939 and in 1951 :

		16-19	20-24	25-29	30-34	35-39	40-44
1939	..	74.9	78.7	64.9	46.3	30.3	22.5
1951	..	74.6	71.7	47.0	32.1	24.0	19.2

No significant decline is seen at age 16-19. All other ages show a decline, which is smaller at the extreme ages and greater from 25 to 34, where the decline is substantial.

Extra-maritally conceived maternities related to the population are shown in Table XI with distinction of mother's age.

The highest rates are for women aged 20-24 and 25-29. Before the war the highest rate was clearly that of the 20-24 age group, but since the war the difference between this and the succeeding age group has narrowed considerably, indeed in 1946 and 1947 the rate was actually higher in the older of the two groups. This change in the relative rates of these two age groups is part of a general tendency for the rates at the higher ages to increase more than those at the lower ages. This is demonstrated by the following statement showing the ratio of the rates of 1951 to those of 1938, taken as 100 :

Age	...	...	...	15-	20-	25-	30-	35-	40-	·
Ratio	...	...	...	121	116	142	194	162	136	

**Table XI.—Extra-maritally conceived maternities per 1,000 unmarried females, 1938 to 1951, England and Wales**

Age of mother	1938	1939	1940–1945 Average	1946	1947	1948	1949	1950	1951
15– .. ..	12.0	12.1	11.1	11.4	12.6	14.3	15.5	15.2	14.5
20– .. ..	37.1	36.5	36.5	42.3	49.7	50.8	47.4	44.7	42.9
25– .. ..	27.6	26.6	35.0	44.3	50.6	47.5	40.9	41.4	39.3
30– .. ..	16.0	15.8	23.5	33.6	35.3	33.4	32.7	29.7	31.1
35– .. ..	10.6	10.0	13.0	17.9	18.9	18.5	18.1	17.6	17.2
40–44.. ..	4.2	4.0	5.2	6.0	6.2	6.0	5.8	5.4	5.7
15–44.. ..	19.8	19.0	20.9	25.0	28.1	28.3	26.8	25.6	24.7
Ratio to 1938:									
Crude .. ..	1.00	0.96	1.05	1.26	1.41	1.42	1.35	1.29	1.25
Standardized	1.00	0.98	1.07	1.27	1.44	1.45	1.38	1.33	1.29

The increases in the rates at ages over 30, although striking, are not as important, from the point of view of the resulting increase in the numbers of extra-maritally conceived maternities, as the much smaller increases at the younger ages, the assumed population at risk at ages over 30 being only some 25 per cent of the total aged 15–44. (As has been remarked earlier the population actually at risk depends on factors other than age and marital condition.) The proportions of the total extra-maritally conceived maternities in each group in 1951, distinguishing illegitimate and legitimate maternities were :

	Age of mother						
	15-19	20-24	25-29	30-34	35-39	40-44	15-44
Illegitimate .. ..	14.7	29.2	23.7	17.0	11.0	4.4	100
Legitimate (pre-marital conceptions) .. ..	28.7	49.1	13.9	5.3	2.3	0.7	100
Combined .. ..	23.1	41.2	17.8	10.0	5.7	2.2	100

Sixty-eight per cent of the illegitimate and 92 per cent of the legitimate extra-marital maternities, i.e. a total of 82 per cent of all pre-marital conceptions, related to mothers under the age of 30.

### Legitimate Births and Fertility

Of the total live births which occurred in 1951, 644,758 were registered as legitimate, compared with 766,800, 834,423, 733,732, 693,611 and 661,847 in the post-war years 1946 to 1950 respectively, and 594,825 in the last pre-war year, 1938. Since the post-war peak year of 1947, the annual number of legitimate live births has declined, but by a progressively decreasing amount each year. The legitimate live births in 1948 numbered 101,000 less than those in the previous year, in 1949 they were 40,000 less, in 1950 32,000 less and in 1951 17,000 less. It is thus seen that the inevitable decline from the artificially



inflated birth incidence of 1947 has been virtually completed and a period of relative stability seems likely to ensue.

The purpose of this section however is not merely to confirm the broad trend of fertility, which has been indicated in earlier paragraphs, but to bring into relief some features of fertility experience which are relevant only to married women and for whom alone the essential statistics are available. Nevertheless it may be necessary to emphasize that, at this stage, too much should not be read into the apparent stabilization of the annual number of legitimate live births above that of 1938, since there have been sharp changes of a probably non-recurring character in the associated population at risk to which reference has already been made and which must again be taken into account here.

It is customary to relate child-bearing to women of ages 15-44, and legitimate births to the married women in this age group. Owing to the unprecedented high marriage rates of the last 15 years, to which attention is drawn in the marriage section of this commentary, the number of married women aged 15-44 in the population is higher than ever before, although the number of women of all marital conditions of these ages has been declining, as the following summary statement shows :

	Women enumerated aged 15-44		Proportion married
	All marital conditions (thousands)	Married (thousands)	
1931 Census .. .. .	9,825	4,917	50 per cent
1951 Census 1 per cent Sample ..	9,499	6,156	65 per cent

Thus the current legitimate live birth experience, when related to the number of married women at risk, as in the following statement, extracted from Table C of Part II, compares less favourably with similar rates for the pre-war period.

Year	1938	1946	1947	1948	1949	1950	1951
Legitimate live birth rate per 1,000 married women aged 15-44 .. .. .	110.0	128.7	139.7	121.7	114.4	108.6	105.2

The rate, though recently falling more slowly than immediately after the peak year of 1947, has nevertheless declined to below the level of 1938.

Whilst relating legitimate live births to married women aged 15-44 does achieve broad correspondence between the births and the population producing them, precise measurement of legitimate fertility must take account of differences in birth rates of women of different ages (within the range 15-44) and of different durations of marriage. Table XII shows the legitimate live birth rate per 1,000 married women aged 15-44 and three comparisons of the annual rate with that of 1938, using a crude rate, an age-standardized rate and a rate standardized for both age and duration of marriage.

Before examining in detail the trends in fertility rates shown in columns (4), (5) and (6) of the table, it is useful to consider the differences between these

**Table XII.—Legitimate Live Births; Rate per 1,000 Married Women aged 15–44 and crude, age standardized and age and duration standardized rates compared with that of 1938; 1938, 1939–49 and 1946 to 1951, England and Wales**

Period	Legitimate live births (thousands)	Rate per 1,000 married women aged 15–44	Ratio to 1938 Rate taken as 1,000 of :		
			Crude rate of column (3)	Rate of column (3) standardized for age	Rate of column (3) standardized for age and duration of marriage
(1)	(2)	(3)	(4)	(5)	(6)
1938.. ..	594.8	110.0	1,000	1,000	1,000
1939–49* ..	663.5	112.5	1,023	992	1,009
1946 ..	766.8	128.7	1,170	1,143	1,177
1947.. ..	834.4	139.7	1,270	1,246	1,282
1948.. ..	733.7	121.7	1,106	1,076	1,105
1949.. ..	693.6	114.4	1,040	1,007	1,035
1950.. ..	661.8	108.6	987	960	989
1951.. ..	644.8	105.2	956	933	963

\* Annual averages.

columns, the reasons for these differences and the light which this throws on the structure of the population of married women of reproductive ages. First, to examine age structure, columns (4) and (5) may be compared. Without exception the ratio of column (5) is less than that of column (4), showing that married women under the age of 45 have been on the average younger since 1938, though the population of all women aged 15–44 (without distinction of marital condition) has been ageing during this period. This ageing of the population in general arises from the rapid decline in fertility in earlier years. The adolescent girls of to-day represent smaller generations than their mothers. The youthfulness shown in the married population means therefore that these younger generations are marrying at higher rates which more than counterbalance their smaller numbers in determining the replenishment of the population of married women.

It would be reasonable to expect that, if recent high marriage rates have created a relative preponderance of young married women, their present duration of marriage will also be relatively short, so that standardizing for duration of marriage would still further reduce the rate. It would appear from Table XII that this is not so, since the ratios of column (6) are higher than those of column (5). The reason is that, whilst the recent marriages have produced substantial numbers at short durations, most of these married women are not at shorter marriage durations than would be implied by their attained age. Standardizing for age alone has already taken full account of the fact that young women by virtue of their youth can only have been married for a short time. Thus the additional correction for duration after age standardization has been achieved is only allowing for the earlier age at marriage of those of a particular attained age. The result of the recent decline in ages at marriage has been that at present ages the married women of to-day have been married *longer* than in 1938, and hence the ratios in column (6) of Table XII are higher than those of column (5).

Thus, to reiterate, column (5) is obtained by adjusting column (4) for the



recent high incidence of marriages, in so far as this weights the population of married women aged 15–44 with young women of correspondingly short durations, but it over-corrects in view of the recent lowering of age at marriage and consequent expansion of marriage duration. The over-correction is removed to derive column (6).

The mean crude rate of the war and post-war period as a whole—1939–49—was 2·3 per cent above the corresponding rate for 1938, but the decline from the 1947 peak had already more than removed this excess by 1950, and in 1951 the rate was 4·4 per cent lower than in 1938.

After standardizing for age and duration (column (6) ), however, a slightly more favourable picture is obtained of a rate in 1951 only 3·7 per cent below that of 1938. On the whole the difference between column (4) and column (6) is small, a fact which serves to demonstrate that the sharp changes in marriage experience have not produced any temporary artificial inflation of the birth rate such as is sometimes alleged to have occurred. In fact the excess of column (6) after correcting for this factor indicates that the reverse is true and that the crude rate has been slightly deflated.

Chance fluctuations from year to year are a normal feature of birth rates and no significance need be attached to them so that the events so far depicted are not inconsistent with the probability of an approach to stability at the 1938 level, but the future is still uncertain.

What we are discussing here is essentially the building of families, and a permanent decline in legitimate fertility would inevitably imply a decline in family size. The population may be maintained by smaller families if more women marry, so that there are more families, but already marriage rates are so high in England and Wales that there is little possibility of further increase. In effect therefore any palliative to a decline in legitimate fertility has already been applied, and a further decline in fertility could not be tolerated if the population is to be maintained. We have seen earlier (page 23) that in 1951 births were approximately at replacement level. Family size is considered later in this commentary.

### **Legitimate Fertility by Mother's Age and Duration of Marriage**

Legitimate maternities at successive marriage durations are classified by individual ages of the mother in Table OO of Part II of each year. As there published, the records are subject to a degree of incompleteness, by the inclusion of cases in which the age of the mother or her date of marriage (from which duration is calculated) were not recorded. With the object of presenting the serial record in a consistent and complete form, the “not stated” cases have been distributed as described on page 25 and the maternities so adjusted are shown for the year 1951 by quinary groups of age in Table 3 of Appendix B. The corresponding maternities for 1938–45 were shown in Table IV of Appendix I on page 168 of the 1940–45 Civil Text, and for 1946–50 in Table 4 of Appendix II on page 188 of the 1946–50 Civil Text.

Annual Rates corresponding to the adjusted maternities are shown in Table 4 of Appendix B and have been obtained by relating them to the estimated years of married life exposed to risk, the calculation of which was described in Appendix II of the 1940–45 Civil Text. Similar annual rates for 1938–45 appeared in Table V of Appendix I on page 172 of the 1940–45 Civil Text and for 1946–50 in Table 5 of Appendix II on page 192 of the 1946–50 Civil Text. It should be noted that a maternity rate expressed per year of married life may be regarded as equivalent to the annual rate per married woman. The

rates shown are maternity rates and to obtain equivalent birth rates they should be multiplied by the appropriate ratios of births to maternities.

**Analysis by Age.**—Table XIII shows the numbers of legitimate maternities by mothers' age at maternity, for the pre-war year 1938, the average annual numbers for the period 1939–49 covering the war-time disturbance and post-war recovery, and for each individual year from 1946 to 1951. In the lower part of the table is shown the distribution of these maternities per thousand total over the six quinary age groups of mothers between 15 and 45 (the few cases at ages over 45 being included in the final group).

**Table XIII.—Distribution of Legitimate Maternities by Mothers' Age, 1938 to 1951, England and Wales**

Mothers' age	1938	Average 1939–49	1946	1947	1948	1949	1950	1951
Total number of maternities (in hundreds)								
	610,7	674,7	777,6	844,0	741,5	700,5	668,3	651,0
Age distribution per 1,000 total								
15–.. ..	36	31	23	27	34	38	39	38
20–.. ..	233	248	231	255	268	274	272	275
25–.. ..	324	309	304	321	325	338	332	327
30–.. ..	237	232	253	225	204	190	199	208
35–.. ..	126	135	146	132	128	121	120	115
40 and over	44	45	43	40	41	39	38	37

Throughout the period the largest proportion (about one-third) of maternities occurred to mothers between the ages of 25 and 30, but the distributions are not sharply peaked and proportions not very much smaller in size were associated with mothers in the immediately older (one-fifth) and younger (just over a quarter) age groups. Altogether the maternities between ages 20 and 35 have accounted for almost exactly 80 per cent of the total in each period shown in the table. During the war and immediate post-war years there were two main changes in the distribution—a shift to the older mothers, whose lives were less disturbed by the war, and a rise in the proportion at age 20–24 following the large increase in numbers of young brides in 1939 and 1940. Latterly, there has been a complementary and temporary shift to the younger ages, where the greater degree of war separation implied postponed births. The continued high incidence of marriages at young ages, a more permanent feature of the statistics, is tending to maintain the preponderance at the younger ages, and the post-war pattern which is emerging, indicates an average age of mothers younger than in 1938.

In the top half of Table XIV these maternities are related to the women at risk in the form of rates per 1,000 married women at each age in each calendar year, extracted from Table 4 of Appendix B of the present volume, Table 5 of Appendix I of the 1940–45 Civil Text and Table 5 of Appendix II of the 1946–50 Civil Text. In the lower half of the table each rate is compared with that of 1938. Fertility varies with duration of marriage independently of age and to eliminate the duration factor, the comparisons are shown in Table XIV in a standardized form, representing the percentage ratio which the maternities actually recorded at each age bear to those which would have emerged had the married women been subject to the 1938 age-duration specific rates.



Table XIV.—Legitimate Maternity Rates by Age, 1938 to 1951, England and Wales

Mothers' age	1938	1939-40	1946	1947	1948	1949	1950	1951
Maternity rates per 1,000 married women								
15-.. ..	550	371	348	469	468	472	461	424
20-.. ..	272	246	252	310	284	270	255	254
25-.. ..	175	176	210	228	191	182	173	169
30-.. ..	112	116	143	142	119	109	106	104
35-.. ..	61	67	81	79	67	60	57	53
40-.. ..	23	23	26	26	23	20	19	17
15-44 ..	113	114	131	141	123	116	110	106
Ratio to 1938 rate taken as 100 (Duration standardized)								
15-.. ..	100	68	64	85	86	88	86	79
20-.. ..	100	91	94	116	106	101	95	95
25-.. ..	100	104	126	137	115	109	104	102
30-.. ..	100	107	134	134	111	102	99	96
35-.. ..	100	110	133	130	110	98	93	88
40-.. ..	100	101	111	112	99	86	80	74
15-44*	100	100	116	126	109	102	97	95

\* Standardized for age and duration.

In every period shown in the table, the rates decline with age, at first sharply and thereafter more slowly.

The crude maternity rates in 1951 are lower than those of 1938 at every age though much less so at the central ages where most of the maternities are concentrated than at the extremes. Where the comparison is made on the basis of duration-standardized rates it is even more evident that between the ages 20 and 35, there is very little difference between the rates for 1938 and 1951, the decline being mainly confined to the very young or to the much older women.

As far as the older women are concerned, women over age 35 will in general have been married for several years. The rates they had experienced on average in 1939-49, when some 5 to 10 years younger than their 1951 age, may be seen to have been above the 1938 rates. Thus the subsequent decline does not necessarily suggest that they will ultimately have smaller families than generations of some 10 to 15 years earlier.

The decline at the youngest age group may seem more serious, even though this group contributes only 4 per cent of all maternities. However the decrease in the rate does not represent a decline in fertility as normally understood. In 1938, of 21,878 legitimate maternities to mothers under age 20, 15,513 or 70·9 per cent had been premaritally conceived. The similar figures for 1951 were 14,460 out of 24,608 or only 58·8 per cent. If the post-maritally conceived element in 1951 had remained the same (10,148) but the premaritally conceived element had increased to form the same proportion of the whole as in 1938, there would have been an additional 10,265 maternities to this age group in 1951, increasing the maternity rate to 112 per cent of the 1938 rate. A similar adjustment to the rates for ages 20-24 and 25-29 would raise them to 106 and 105 per cent of the 1938 rates, but the older age groups would get no advantage from this correction. Thus post-maritally conceived maternity rates up to age 30 have increased, not declined, since 1938 and the decline in the total rates is due to a reduction in pre-marital conceptions.

**Analysis by Duration of Marriage.**—The distribution of legitimate maternities according to marriage duration\* is shown for 1938, 1939–49, and the individual years 1946 to 1951 in Table XV.

**Table XV.—Distribution of Legitimate Maternities by Marriage Duration, 1938 to 1951, England and Wales**

Marriage duration	1938	Aver- age 1939–49	1946	1947	1948	1949	1950	1951
Pre-maritally conceived per 1,000 total legitimate maternities of each year								
0–8½ months.. ..	106	73	56	71	84	84	81	78
Distribution per 1,000 total conceived after marriage in each year								
8½–11½ months .. ..	60	60	61	69	74	63	62	60
1– year .. ..	154	149	123	152	159	167	155	150
2– years .. ..	122	112	78	95	120	125	127	122
3– years .. ..	104	96	77	73	86	107	109	114
4– years .. ..	88	85	89	77	65	77	96	99
5–6 years .. ..	131	146	197	166	135	119	117	141
7–9 years .. ..	138	152	169	180	177	166	146	124
10 years and over ..	203	200	206	188	184	176	188	190

The most striking change shown by this arrangement of the data is that for the first duration identified, namely 0–8½ months, the duration adopted as representing the incidence of premaritally conceived maternities. In 1938 these maternities accounted for 106 per 1,000 of the total legitimate maternities recorded. During the war the rate fell rapidly and then rose but it has never regained its pre-war value, and indeed has been falling in recent years, both the 1950 and 1951 proportions of 81 and 78 per 1,000 being less than the previous year's proportions, though only by a small amount.

To avoid the influence of these premarital conceptions upon the distributions of later durations, the proportions for the latter are shown per 1,000 conceived after marriage in the lower part of Table XV. War conditions encourage the postponement of births and so in a distribution of maternities by duration of marriage neither the aggregation of the experiences of the war and immediate post-war years nor any other simple expedient can eliminate or even effectively mitigate the abnormality of the period as has been done in the previous sections, because the postponement is not merely to a later year but to a later duration. A second factor influencing the incidence of maternities by duration has been the wide fluctuations in marriage rates, leading to corresponding fluctuations in the numbers of mothers at risk at the various durations ; and the effects of this second factor have not yet been exhausted. Thus the fact that a shift of weight from very short durations to those of three years or more may be seen from Table XV to be the current trend, must not be taken to be an indication of a change in family spacing ; it is attributable to a parallel shift in weight of the married women at risk. The effect of the changing distribution of the numbers at risk is removed in Table XVI where the numbers of maternities at each marriage duration are expressed as a rate per 1,000 married women aged 15–44 passing through the duration specified.

Disregarding the rate at under 8½ months duration, associated with pre-marital conceptions, and remembering that each married woman is only

\* Durations shown in years, e.g. 1–, 2–, etc., should be read as strictly meaning 11½ months–1 year 11½ months, 1 year 11½ months–2 years 11½ months, etc.



Table XVI.—Legitimate Maternity Rates by Duration of Marriage, 1938 to 1951, England and Wales

	1938	Average 1939-49	1946	1947	1948	1949	1950	1951
Rates per 1,000 Married Women aged 15-44 at each duration								
0-8½ months ..	187	135	117	159	162	164	158	151
8½-11½ months ..	98	104	120	151	130	110	109	108
1 year .. ..	244	258	283	332	295	283	266	266
2 years .. ..	203	200	213	242	230	222	209	209
3 " .. ..	177	175	194	218	193	197	189	186
4 " .. ..	156	160	189	213	173	167	172	171
5 " .. ..	138	147	182	196	162	148	143	149
6 " .. ..	119	136	175	176	143	146	123	120
7 " .. ..	105	120	154	155	126	118	114	103
8 " .. ..	94	103	132	132	111	95	98	94
9 " .. ..	81	91	115	114	96	87	84	81
10 years and over	46	48	57	55	46	41	40	38
All durations ..	113	115	131	141	123	116	110	106
All durations from 8½ months ..	106	111	129	137	118	110	105	102
Ratio to 1938 rate taken as 100 (age standardized)								
0-8½ months ..	100	66	60	83	83	82	78	73
8½-11½ months ..	100	106	123	157	135	114	113	111
1 year .. ..	100	104	113	135	121	115	108	107
2 years .. ..	100	96	102	116	112	108	102	101
3 " .. ..	100	96	104	118	105	109	105	103
4 " .. ..	100	101	117	131	107	103	108	108
5 " .. ..	100	105	130	137	112	102	99	105
6 " .. ..	100	113	145	145	115	116	98	97
7 " .. ..	100	114	148	146	116	106	102	93
8 " .. ..	100	109	142	140	114	95	96	92
9 " .. ..	100	113	144	142	117	104	100	93
10 years and over	100	105	123	119	100	89	84	80
*All durations ..	100	100	116	126	109	102	97	95
*All durations from 8½ months ..	100	104	123	132	112	104	99	97

\* Standardized for age and duration.

exposed for a quarter of a year to the risk of maternity at durations 8½-11½ months, it may be seen that in every period considered the rates decline with lengthening duration, at first steeply and thereafter more gradually.

From the lower half of the table, showing the age standardized ratio of the rates to those of 1938, it may be seen that the rate in 1951 at durations under 8½ months is exceptional, being 27 per cent *below* the corresponding 1938 rate whilst the rate for the remainder of the first year of marriage is 11 per cent *above* its 1938 counterpart ; the rates for the next 5 years of duration are all in excess of the corresponding rates in 1938. The special features of maternity rates at durations under 8½ months, conventionally associated with premarital conceptions, have already been discussed and need not be taken into account further here. Disregarding therefore this exceptional case, the percentage ratios of the 1951 to 1938 rates show a decline with increasing duration from an 11 per cent excess at duration 8½-11½ months to a deficiency of 7 per cent at 9 years, and further to a deficiency of 20 per cent at durations over 10 years.

In general the 1951 rates show a small decline from those of 1950, which in turn were below the 1949 rates. The All Durations rate in 1951, standardized for both age and duration, represented 97 per cent of the 1938 rate, the 1948 to 1950 values having been 112, 104 and 99. Thus the decline from the post-war peak in 1947, when the rate was 32 per cent above that of 1938, has not been entirely arrested though movement has become very slow and there are the same indications of approaching stability as have been seen in earlier sections.

**Analysis by Age and Duration Combined.**—The analyses so far examined show that fertility declines with advancing age of mother and also with lengthening duration of marriage when these factors are considered separately, but to what extent either or both are responsible for the decline is not clear, since the shorter durations tend to be associated with the younger mothers and the longer durations with the older mothers, and arrangements of the data by either factor alone automatically reflect the influence of the other. For an appreciation of the separate and independent effects of these factors, tabulations of birth or maternity rates are required in which distinction is made simultaneously of age of mother and duration of marriage. Such tabulations of maternity rates for each year from 1938 to 1945 were shown in Table V of Appendix I of the Civil Text for 1940–45 on pages 172–174 ; for each year from 1946 to 1950 in Table 5 of Appendix II of the Civil Text for 1946–50 on pages 192–194 ; and for 1951 are shown in Table 4 of Appendix B of the present volume. Rates for 1951 and a comparison of the 1950 and 1951 rates with those of 1938 have been extracted from these sources and are shown in Table XVII.

It should be noted that the rates in the Appendix Tables are expressed as per year of exposure to risk and those in Table XVII as per married women. The two sets of rates differ only at durations of marriage under one year, the important difference being that the numerically lower rates at duration  $8\frac{1}{2}$ – $11\frac{1}{2}$  months in Table XVII merely reflect the shortness of the period—only a quarter of a year—in which the women concerned could experience a maternity to count in this duration.

With a few minor exceptions, the rates for 1951 may be seen from the Appendix Tables to conform to the general pattern of those of earlier years. At each duration the rates decline more or less consistently with increasing age of mother, and at each age of mother they decline with lengthening duration of marriage after rising to a maximum in the second year of marriage. It should be noted that the first year of marriage is peculiar in that it includes a substantial period during which the births must be the result of premarital conceptions.

The rates at durations under  $8\frac{1}{2}$  months, conventionally attributed to premarital conceptions, may be seen to share with those at other durations the property mentioned above, of declining with age. The decline from the rate for mothers under age 20 to that of the next older group aged 20–24, is very steep, the latter rate being only some 40 per cent of the former, but thereafter the decline continues more gradually. The ratio of the rates at this duration in 1950 and 1951 to those in 1938, show that at practically all ages the rates in 1950 and 1951 were below those of 1938 ; at older ages they were substantially below the 1938 rates, and at younger ages even further below. Further, a comparison of the 1950 and 1951 ratios shows that these rates are still declining at all ages. The examination of maternity rates at this duration in greater detail appears on page 39.

Excluding premarital conceptions the rates of 1951 in the first two years of marriage were generally higher than those in 1938, and slightly lower than those in 1950. At longer durations, the 1951 rates for the central age groups were



Table XVII.—Legitimate Maternity Rates per Married Woman distinguishing both Age and Duration of Marriage, 1951 Rates, and 1950 and 1951 Rates compared with 1938 Rates taken as 100, England and Wales

Age	All Durations	Durations (Years from 1-)											
		0-8½ mths.	8½-11½ mths.	1-	2-	3-	4-	5-	6-	7-	8-	9-	10 and over
1951 Rates													
15- .. ..	·424	·353	·112	·328	·303	·288	—	—	—	—	—	—	—
20- .. ..	·254	·147	·118	·299	·244	·229	·208	·197	·166	·179	·243	—	—
25- .. ..	·169	·101	·110	·258	·209	·195	·188	·164	·135	·121	·114	·110	·117
30- .. ..	·104	·098	·100	·232	·182	·160	·157	·139	·115	·100	·095	·085	·073
35- .. ..	·053	·071	·059	·168	·123	·108	·102	·097	·084	·073	·067	·059	·042
40- .. ..	·017	·032	·019	·061	·051	·040	·038	·036	·029	·025	·024	·023	·015
15-44.. ..	·106	·151	·108	·266	·209	·186	·171	·149	·120	·103	·094	·081	·038
1950 Rate compared with 1938 Rate taken as 100													
15- .. ..	84	74	117	116	96	89	—	—	—	—	—	—	—
20- .. ..	94	74	115	105	98	95	96	84	80	79	74	—	—
25- .. ..	99	99	118	114	110	113	113	101	100	97	90	91	76
30- .. ..	95	103	99	110	103	111	114	108	104	114	104	102	84
35- .. ..	93	90	92	106	90	104	110	105	96	105	102	110	88
40- .. ..	83	82	78	94	94	87	98	89	89	91	87	92	76
15-44.. ..	97	84	112	109	103	107	110	104	103	109	104	104	87
1951 Rate compared with 1938 Rate taken as 100													
15- .. ..	77	67	108	106	92	93	—	—	—	—	—	—	—
20- .. ..	93	70	114	106	99	97	95	93	75	72	69	—	—
25- .. ..	97	91	115	111	106	110	115	106	96	89	84	87	75
30- .. ..	93	97	98	108	103	105	114	113	106	102	101	98	82
35- .. ..	87	83	83	105	92	96	97	103	101	99	102	97	82
40- .. ..	74	79	69	95	102	85	88	97	83	78	80	88	71
15-44.. ..	94	81	110	109	103	105	110	108	101	98	100	100	83

alone in excess of their 1938 counterparts, and no clear-cut trend from 1950 to 1951 is visible, about half the rates rising and the other half falling by a small amount. If anything the rates for the longest durations of all tend to show a falling trend. This is consistent with the suggestion that there is a current tendency to concentrate family building in the early years of married life to a greater degree than formerly.

**Legitimate Fertility in the First Two Years of Marriage.**—In the Supplement to Table IV of Appendix I of the 1940-45 Civil Text, legitimate maternities occurring within the first two years of marriage during the period 1938 to 1945 were analysed by quarter years of marriage duration. Corresponding analyses for the years 1946 to 1950 appeared in the Supplement to Table 4 of Appendix II of the 1946-50 Civil Text on page 190, and for 1951 appear in the present volume in Table 3 of Appendix B. These analyses are summarized in Table XVIII with an additional section showing approximate conception rates in the first five quarters of marriage (corresponding to births in the fourth to eighth quarter) related not to all married women passing through the marriage duration, but restricted to those not pregnant at the beginning of each quarter. In 1938, for example, the maternity rates per 1,000 married women in the first three columns of Table XVIII show that 187 out of 1,000 women were already pregnant at the date of their marriage, so that the 98 maternities per 1,000 married women shown for duration 8½-11½ months were conceived by the 813 women not pregnant at the date of marriage, which gives a conception rate of 121 in the first quarter of marriage per 1,000 women not already pregnant at the beginning of the quarter. The rates for the succeeding quarters have been obtained similarly by dividing the maternity

rate for the appropriate quarter by 1,000 minus the sum of the maternity rates in the three preceding quarters and multiplying by 1,000.

Table XVIII.—Legitimate Maternities within the first two years of Marriage, 1938 to 1951, England and Wales

	Maternity Rates per 1,000 Married Women at the following Marriage Durations (months)								Corresponding Conception Rates* in the five quarters following marriage amongst women not already pregnant at the beginning of each quarter.				
	0-2½	2½-5½	5½-8½	8½-11½	11½-14½	14½-17½	17½-20½	20½-23½	1st Qr.	2nd Qr.	3rd Qr.	4th Qr.	5th Qr.
All Ages (15-44) Rates in Successive Periods													
Period 1938 ..	20	81	86	98	97	63	43	42	121	132	88	58	53
1939-49 ..	13	50	71	105	88	66	55	50	121	114	90	74	63
average													
1946 ..	11	39	65	120	90	70	60	57	136	116	97	83	73
1947 ..	15	54	92	151	110	82	72	69	180	156	127	110	94
1948 ..	16	57	89	130	96	72	64	62	155	131	105	91	81
1949 ..	16	61	87	110	96	68	60	59	132	129	96	83	76
1950 ..	14	60	83	109	85	66	59	56	129	114	91	80	71
1951 ..	15	56	80	108	84	66	60	58	127	111	91	81	73
Nominal Age† at Marriage													
Annual Age Rates -1938													
15- ..	63	243	226	104	107	81	52	34	222	251	144	73	45
20- ..	19	88	98	102	106	68	49	44	128	149	98	68	57
25- ..	11	44	53	97	92	59	38	44	109	114	78	51	54
30- ..	12	40	46	98	82	52	33	38	109	100	67	43	46
35- ..	15	32	35	65	53	36	23	24	71	61	43	27	27
40- ..	8	15	15	24	20	12	8	7	25	21	13	8	7
15-44 ..	20	81	86	98	97	63	43	42	121	132	88	58	53
1950													
15- ..	32	156	204	120	90	85	83	81	197	173	145	118	109
20- ..	11	56	82	118	92	71	64	61	139	124	100	89	79
25- ..	12	38	58	112	86	64	56	54	126	109	86	76	68
30- ..	15	34	52	96	78	55	47	44	107	95	71	61	54
35- ..	12	26	34	59	48	36	30	27	64	54	42	35	30
40- ..	8	12	11	18	15	12	10	8	19	16	13	10	8
15-44 ..	14	60	83	109	85	66	59	56	129	114	91	80	71
1951													
15- ..	29	145	188	112	86	76	78	78	176	155	124	107	103
20- ..	12	52	78	117	91	71	64	62	136	121	99	89	80
25- ..	12	34	52	109	83	63	55	54	121	103	83	74	68
30- ..	15	30	48	94	71	55	48	44	104	86	70	62	53
35- ..	12	22	32	53	47	38	30	26	57	53	44	35	29
40- ..	9	12	10	16	15	12	10	8	17	16	13	10	8
15-44 ..	15	56	80	108	84	66	60	58	127	111	91	81	73

\* The rates refer to conceptions which result in childbirth.  
† Actual age at duration 0-2½ months.

The rates in this section are of special interest since the children born within two years of marriage represent a substantial proportion of all legitimate births (30 per cent in 1938 and 27 per cent in 1951) and of these between one quarter and one third were represented by children conceived before but born after marriage.

The uppermost section of Table XVIII shows rates for all ages 15-44 combined. From this section it may be seen that in 1938 the highest maternity rate was experienced at duration 8½-11½ months, followed very closely by the next longer duration group, 11½-14½ months. At longer durations the rate falls, at first sharply and thereafter more gently. At the shorter durations, corre-



sponding to premarital conceptions, the maternity rate rises from very low values at extremely short durations to a value at  $5\frac{1}{2}$ – $8\frac{1}{2}$  months duration (86 maternities per 1,000 married women) not far below the rate at  $8\frac{1}{2}$ – $11\frac{1}{2}$  months (98 per thousand).

After the fluctuations experienced in the war years, the maternity rates of 1946 followed a very different pattern from that of 1938. At durations under  $8\frac{1}{2}$  months the rates were far lower than in 1938, whilst those at over  $8\frac{1}{2}$  months were generally higher. Further, at durations over  $8\frac{1}{2}$  months, the previous pattern in which the rates of the first two quarters of post-maritally conceived maternities ( $8\frac{1}{2}$ – $11\frac{1}{2}$  months and  $11\frac{1}{2}$ – $14\frac{1}{2}$  months) were much higher than those of the next 3 quarters was replaced by a pattern in which the rate for the first quarter ( $8\frac{1}{2}$ – $11\frac{1}{2}$  months) alone was substantially higher and the rates thereafter declined sharply. Since 1946 rates of post-maritally conceived maternities have reflected the post-war boom in births, relative stability being reached by 1951 with rates on the whole somewhat above those of 1938. Premaritally conceived maternity rates have also stabilized, but were somewhat below those of 1938. The relationship between the rates in the different quarters has since 1946 moved to a pattern intermediate between that of 1938 and that of 1946. This is illustrated in the following statement showing the rates in quarters from  $2\frac{1}{2}$  to  $14\frac{1}{2}$  months expressed as a percentage of the rate at  $8\frac{1}{2}$ – $11\frac{1}{2}$  months duration :

			$2\frac{1}{2}$ – $5\frac{1}{2}$	$5\frac{1}{2}$ – $8\frac{1}{2}$	$8\frac{1}{2}$ – $11\frac{1}{2}$	$11\frac{1}{2}$ – $14\frac{1}{2}$
1938	..	..	83	88	100	99
1939–45	..	..	53	71	100	90
1946	..	..	32	54	100	75
1947	..	..	36	61	100	73
1948	..	..	44	68	100	74
1949	..	..	55	79	100	87
1950	..	..	55	76	100	78
1951	..	..	52	74	100	78

The lower section of Table XVIII shows maternity rates with corresponding conception rates, at quinary groups of mother's age at marriage, for 1938, 1950 and 1951. The rates for the premaritally conceived maternities at ages under 20 at durations  $2\frac{1}{2}$ – $8\frac{1}{2}$  months are substantially higher than those at  $8\frac{1}{2}$ – $11\frac{1}{2}$  months but at higher ages the differences are increasingly in the opposite direction. For the younger mothers the rates at  $11\frac{1}{2}$ – $14\frac{1}{2}$  months were little different from those at  $8\frac{1}{2}$ – $11\frac{1}{2}$  months in 1938 but for the older mothers they were from 15 to 20 per cent lower. In 1950 and 1951, as has been demonstrated for all ages combined, the rates for durations  $11\frac{1}{2}$ – $14\frac{1}{2}$  months became generally lower than at  $8\frac{1}{2}$ – $11\frac{1}{2}$  months, the deficiency being 20–25 per cent at the younger ages where there had previously been a slight excess. This can be seen from the following statement which shows the rates at  $11\frac{1}{2}$ – $14\frac{1}{2}$  months expressed as percentages of those at  $8\frac{1}{2}$ – $11\frac{1}{2}$  months :

		15–19	20–24	25–29	30–34	35–39	40–44
1938	..	103	104	95	84	82	83
1950	..	75	78	77	81	81	83
1951	..	77	78	76	76	89	94

The deficiency at older ages is not now so large.

An examination of the conception rates shown in the lower part of Table XVIII on the right-hand side, shows substantial changes since 1938. At ages under 20 in 1938, a conception rate of 222 per 1,000 married women was recorded for the 1st quarter, rising to 251 for the 2nd quarter and thereafter declining sharply to 45 in the 5th quarter. In 1951 the rate was 176 in the 1st quarter, somewhat lower than in 1938; the rate in the 2nd quarter at 155 was lower, not higher, than in the 1st quarter and the gentle decline that followed maintained the rate at as high as 103 in the 5th quarter, more than double the 1938 rate in this quarter. The rates at ages 20–24 and 25–29 showed similar though less striking contrasts between the pre-war and the current experience. At higher ages in 1938 the rate for the 2nd quarter was below that for the 1st quarter, but recent experience still shows a much slower decline in the rates with increasing duration than in 1938.

These changes have led to anomalies in general comparisons between rates in 1938 and 1951. The rates in 1951 in the 1st quarter are below those in 1938 except for ages from 20 to 30. In the 2nd quarter they are substantially lower than in 1938. However, in the 3rd to 5th quarters the 1951 rates are generally above those of 1938.

The 1951 rates are slightly below those of 1950, but there is no evidence yet of a permanent trend.

**Cohort Analysis.**—In considering replacement, the total ultimate size of family produced by each married woman is of more interest than the rate at which she may be building her family at any particular time. Maternity rates may be calculated each year and aggregated from year to year to show the average total number of maternities experienced by married women over the whole of various durations of marriage, i.e. effectively to trace their family building as they pass through their reproductive married lives.

During her married life a woman passes not only through successive durations of marriage, but simultaneously through successive ages. Thus, for example, the maternity rates in 1946 at duration 0– at maternal age 20–24, and in 1947 at duration 1– and age 21–25 both belong to the same marriage cohort\*—a somewhat theoretical cohort—and they may be aggregated to show the average number of maternities experienced by the cohort by the end of its second year of married life. Similarly the maternity rate in 1948 at duration 2– and age 22–26 may be added to the previous total to bring it up to the end of the third year of married life, and so on. Maternity rates by advancing ages with durations as required for this procedure have been calculated and the results of their aggregation in the manner described above are shown in Table 5 of Appendix B. In view of the abnormal character of fertility rates at durations under  $8\frac{1}{2}$  months, which has been referred to on several occasions in the commentary, a second aggregation is included in the table in which the influence of premarital conceptions has been removed by excluding the rate at durations under  $8\frac{1}{2}$  months, and inflating the rate for  $8\frac{1}{2}$ – $11\frac{1}{2}$  months by excluding from the denominator the women who had already borne a child at under  $8\frac{1}{2}$  months duration on the grounds that they could not so soon bear a second child.

Table XIX shows the total maternities per married woman, the counterpart of Table 5 of Appendix B without distinction of age at marriage, the maternities for each cohort at successive durations being expressed as a ratio per 1,000

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\* The term cohort is used for convenience to refer to women married during the same interval of time.



to that of the 1937-38 cohort at the same duration. This cohort was the first whose maternities could be aggregated, since the necessary data were not collected until 1938.

**Table XIX.—Total Maternities per Woman Married under age 45, experienced by successive Marriage Cohorts, expressed as a ratio to those of the 1937-38 Cohort taken as 1,000, by duration of marriage, England and Wales. (See Text.)**

(a) Each cohort associated with two calendar years represents the number of married women exposed to risk at durations under one year in the second of the associated years.

(b) The durations 1 year, 2 years, etc., are more precisely 11½ months, 1 year 11½ months, etc.

Original Cohort of New Marriages	Duration of Marriage										
	8½ mths.	1 yr.	2 yrs.	3 yrs.	4 yrs.	5 yrs.	6 yrs.	7 yrs.	8 yrs.	9 yrs.	10 yrs.
Total maternities (ratio to 1937-38)											
1937-38 .. ..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1938-39 .. ..	877	898	924	923	968	979	995	984	1,014	1,013	1,002
1939-40 .. ..	626	698	776	840	894	923	923	958	993	980	966
1940-41 .. ..	583	660	780	833	894	899	946	980	991	968	953
1941-42 .. ..	588	663	799	858	892	948	1,001	1,002	1,006	983	965
1942-43 .. ..	663	740	898	916	989	1,054	1,064	1,060	1,056	1,027	
1943-44 .. ..	717	842	934	990	1,079	1,090	1,083	1,060	1,048		
1944-45 .. ..	604	793	966	1,055	1,104	1,106	1,093	1,067			
1945-46 .. ..	626	832	1,080	1,122	1,165	1,163	1,148				
1946-47 .. ..	850	1,088	1,148	1,162	1,188	1,180					
1947-48 .. ..	866	1,025	1,089	1,098	1,131						
1948-49 .. ..	877	961	1,025	1,051							
1949-50 .. ..	845	937	1,009								
1950-51 .. ..	807	909									
Total maternities, excluding the effect of pre-marital conceptions on the maternities of the first year of marriage											
1937-38 .. ..		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1938-39 .. ..		909	939	932	987	996	1,012	997	1,031	1,028	1,014
1939-40 .. ..		769	835	898	953	977	969	1,005	1,039	1,021	1,002
1940-41 .. ..		736	860	901	964	957	1,004	1,035	1,043	1,013	992
1941-42 .. ..		736	884	932	959	1,014	1,067	1,060	1,059	1,029	1,005
1942-43 .. ..		818	994	985	1,062	1,127	1,128	1,116	1,107	1,069	
1943-44 .. ..		1,008	1,030	1,071	1,164	1,163	1,145	1,111	1,093		
1944-45 .. ..		1,050	1,129	1,190	1,224	1,205	1,176	1,136			
1945-46 .. ..		1,124	1,289	1,274	1,297	1,271	1,237				
1946-47 .. ..		1,488	1,309	1,272	1,282	1,256					
1947-48 .. ..		1,281	1,204	1,177	1,202						
1948-49 .. ..		1,091	1,096	1,106							
1949-50 .. ..		1,066	1,085								
1950-51 .. ..		1,050									

In the top half of the table it may be seen that the ratio for premaritally conceived maternities, which for the cohorts married during the war was a little more than half that of the 1937-38 cohort, has fluctuated in the post-war cohorts between 80 and 90 per cent of the 1937-38 cohort. The current trend would appear to be downward.

In the bottom half of the table, in which the effect of premarital conceptions has been removed, the cohorts of women married in the early war years show a smaller number of maternities than the 1937-38 cohort at shorter durations but, in general, they more than made good the deficiency at later durations in the immediate post-war years and, to date, have experienced a greater total of maternities than the 1937-38 cohort at the same duration. The women married in the latter half of the war and immediately after the war, have been more fertile than the 1937-38 cohort, but the excess of maternities declines with increasing duration. The outstanding cohort, that of 1946-47, had, by the end

of its first year of marriage, nearly 50 per cent more maternities per woman than the 1937-38 cohort, but this excess had fallen to barely 25 per cent by the end of the 5th year of marriage. More recent cohorts have been showing progressively lower fertility but their excess maternities over the 1937-38 cohort has increased slightly with duration. This may be attributed rather to the depression of the 1937-38 cohort's fertility by the intervention of war, than to a rising fertility with duration in recent cohorts.

Distinction of age at marriage is made in Table XX derived from Table 5 of Appendix B but restricted to the maternities at 5 and 10 years duration of marriage.

**Table XX.—Total Maternities per Married Woman experienced during the first 5 and 10 years of marriage by successive Marriage Cohorts, expressed as a ratio to those of the 1937-38 Cohort taken as 1,000, by age at marriage, England and Wales.**  
(See Text.)

(a) Each cohort associated with two calendar years represents the number of married women exposed to risk at durations under one year in the second of the associated years.  
(b) The periods involved are more precisely 4 years 11½ months and 9 years 11½ months.

Original Cohort of New Marriages	Total Maternities						Total Maternities, excluding the effect of pre-nuptial Conceptions on the Maternities of the First Year of Marriage.					
	Nominal Age at Marriage						Nominal Age at Marriage					
	All ages under 45	Under 25	25-29	30-34	35-39	40-44	All ages under 45	Under 25	25-29	30-34	35-39	40-44
Duration : 5 Years												
1937-38..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1938-39..	979	963	1,002	996	974	960	996	984	1,018	1,004	991	964
1939-40..	923	878	960	968	947	873	977	941	996	999	979	937
1940-41..	899	843	961	978	968	967	957	912	995	1,004	1,005	1,018
1941-42..	948	880	1,018	1,012	978	913	1,014	963	1,054	1,036	1,009	964
1942-43..	1,054	979	1,142	1,089	1,085	1,053	1,127	1,073	1,177	1,112	1,121	1,045
1943-44..	1,090	1,014	1,187	1,145	1,067	1,047	1,163	1,110	1,224	1,163	1,093	1,027
1944-45..	1,106	1,023	1,235	1,174	1,101	1,040	1,205	1,142	1,298	1,216	1,152	1,108
1945-46..	1,163	1,090	1,313	1,215	1,115	993	1,271	1,219	1,376	1,264	1,171	1,081
1946-47..	1,180	1,135	1,331	1,166	1,059	1,027	1,256	1,237	1,361	1,183	1,079	1,081
10 Years												
1937-38..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
1938-39..	1,002	987	1,020	1,013	985	968	1,014	1,002	1,030	1,019	1,000	974
1939-40..	966	935	978	973	957	884	1,002	978	999	993	985	948
1940-41..	953	920	972	965	977	974	992	970	991	981	1,008	1,026
1941-42..	965	922	978	961	970	929	1,005	975	996	972	994	983

For as far as the records extend the fertility of the cohorts of women married at the various ages, shown in Table XX follows the same pattern as that discussed above for all married women without distinction of age, viz. a sharp but temporary reduction in the fertility of cohorts married in the early war years, and an increase in fertility of the marriages of the late war years and just after the war. Even at 5 years duration the subsequent decline is not visible, and at 10 years' duration the records are as yet available for only the earlier cohorts. Looking across the row relating to maternities for the 1946-47 cohort at 5 years duration, it may be seen that, for total maternities the maximum excess over that of the 1937-38 cohort is shown for those married at ages 25-29. For younger and older ages the margins are much smaller. Reference has



already been made to the substantial decline in premaritally conceived fertility at the younger ages, and it is not therefore unexpected that the right-hand side of the table shows a somewhat different picture after the premaritally conceived component has been removed. Women married at 25–29 still show the maximum excess of 36·1 per cent (previously 33·1), but those married at ages under 25 have an excess of 23·7 per cent. (previously 13·5). The smaller margins of older marriage ages are not appreciably increased.

These analyses materially assist understanding of current fertility trends, but they suffer from serious defects. The data from which they are prepared did not become available until 1938, and almost immediately the impact of the Second World War imparted such abnormal influences on the ensuing fertility as to invalidate the experience as a yardstick of normality against which current trends could be measured. In the above tables, the cohort 1937–38 has been used as a standard, merely as the first cohort of the series. It must be recognized however that this cohort had but two years or so of normal family building before the war. It could even be suggested that the international tension immediately prior to the commencement of hostilities affected these women from the outset of their marriages. Certainly their maternity experience after 5 or 10 years of marriage cannot be deemed to constitute a fair standard.

It may be that the families of current marriages will be built up more normally, but it will be some time before these families will be sufficiently nearly complete to have revealed their size, and further time must elapse for the families of succeeding cohorts to be built before any firm trend can be determined. Thus it is in the future rather than the present that the vital statistics accumulated under the Population (Statistics) Act of 1938 may be expected to begin to show the trend of fertility with any clarity.

### **Maternities by Number of Previous Children**

Legitimate maternities occurring in the calendar year are classified for various ages of mothers at the time of the maternities, according to the size of the existing families to which the new children were born and are published in Tables II, KK and MM of the successive Parts II. The types of analysis provided by these tables are as follows :

Table II.—The number of previous children (surviving, dead or stillborn) by the present and any previous husband.

Table KK.—The number of surviving previous children by the present and any previous husband.

Table MM.—The number of previous children (surviving, dead or stillborn) by the present husband only.

An additional analysis of the information in Table MM by the duration of the present marriage is provided in Table SS (Part II). The object of these analyses is to show how families are growing by ascertaining the frequencies at which first, second, third, etc., children are being born to mothers of different ages, and thus to throw light on the family building habits of the community, though an adequate statistical examination of this aspect must await knowledge of the size distribution of the existing families of all married women (and not only those experiencing maternities) to which the new maternities can be related. From the maternity analyses alone, however, a broad conspectus of the experience of the years 1938 to 1939 and 1946 to 1951 is provided by the summary of the information in Tables II, KK and MM for mothers of all ages shown in Table XXI.

**Table XXI.—Average Size of existing families to which children were born to Mothers of all Ages and Durations of Marriage, 1938 to 1939 and 1946 to 1951, England and Wales**

Type of family measurement	Average size of family to which children were born in :							
	1938	1939	1946	1947	1948	1949	1950	1951
All children by all husbands (II) ..	1.441	1.417	1.185	1.114	1.182	1.199	1.244	1.261
Surviving children by all husbands (KK)	1.242	1.228	1.066	1.009	1.070	1.093	1.140	1.160
All children by present husband (MM) ..	1.413	1.393	1.163	1.089	1.150	1.165	1.209	1.226
Children by previous husband (II-MM).	0.028	0.024	0.022	0.025	0.032	0.034	0.035	0.035
Stillborn or dead children (II-KK) ..	0.199	0.189	0.119	0.105	0.112	0.106	0.104	0.101

The high incidence of new marriages in the early years of the war followed by the secondary wave in the immediate post-war years, added to the population of married women abnormally large numbers with no previous children. As a result the average size of families to which children were being added, which was 1.441 in 1938, was reduced in 1946 to only 1.185 and declined still further to 1.114 in 1947. Thereafter the recovery in family building after the war was reflected in additions to the families of those recently married, and the average number of previous children rose to 1.261 in 1951. The rate of increase is so slow that a return to the pre-war average seems unlikely. However the interpretation of these average family sizes, restricted as they are to those families to which additions were being made, is not an easy matter. It is possible and indeed probable, that completed family sizes can be maintained even though the average size of families under construction as envisaged above may not regain previous values. This matter is discussed in more detail later in this section.

The last two lines of Table XXI show the average number of children by former husbands, and of stillborn or dead children, of women who gave birth to children in the years shown. The number of children by former husbands declined slightly from 0.028 in 1938 to 0.022 in 1946, conforming to the downward trend of all the average family sizes shown in the table, but subsequently the number rose sharply and seems to have become stabilized at 0.035. Undoubtedly this rise may be attributed to the substantial increase in divorce incidence since the war. The last line, which shows the average proportion of the total previous children who were stillborn or dead, is of considerable interest and significance. The surviving families to which children were born in 1938 averaged 1.242 out of a total of 1.441, or 86.2 per cent. By 1946 the proportion surviving had risen to 90.0 per cent, and by 1951 to 92.0 per cent. This improvement reflects the remarkable decline in foetal, infant, and child mortality which has taken place in recent years.

The general distribution of the legitimate maternities of 1938 to 1951 according to the number of previous children is shown in Table XXII, which is based on the data of Table MM in the successive Parts II.

In 1938 81.1 per cent of the maternities were to the smaller existing families of two previous children or less. By 1951 this proportion had risen to 85.8 per cent. If this group is divided by family size, it is found that the increase is



**Table XXII.—Legitimate Maternities distributed according to the number of Mothers' previous children by Present Husband, 1938 to 1951, England and Wales**

Number of previous Children	1938	Average 1939-49	1946	1947	1948	1949	1950	1951
Number of Maternities (hundreds)								
0	257,5	291,4	333,3	381,8	314,7	286,4	261,8	251,9
1	154,8	189,9	231,0	245,2	225,6	221,2	211,6	203,0
2	78,9	89,8	104,8	109,3	101,5	99,1	100,8	101,6
3	42,3	43,0	46,9	47,2	44,4	42,6	44,0	44,9
4	25,3	23,1	24,0	23,4	21,7	20,4	20,7	21,4
5-6	27,5	22,2	21,4	20,9	19,2	17,9	17,4	17,0
7-9	15,4	11,3	10,4	9,8	9,2	8,3	8,0	7,4
10-14	4,2	3,0	2,5	2,4	2,3	2,1	2,0	1,8
15 and over	1	1	1	1	1	1	1	1
Not stated	4,7	2,8	3,3	4,0	2,8	2,4	1,9	1,8
Total Stated	606,0	673,8	774,4	840,1	738,7	698,1	666,4	649,1
Distribution per 1,000 Stated								
0	425	432	431	454	426	410	393	388
1	256	282	298	292	306	317	318	313
2	130	133	135	130	138	142	151	157
3	70	64	61	56	60	61	66	69
4	42	34	31	28	29	29	31	33
5-6	45	33	28	25	26	26	26	26
7-9	25	17	13	12	12	12	12	11
10 and over	7	5	3	3	3	3	3	3
Total ..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

not spread evenly over the three family sizes involved. Most of this increase is concentrated in families with one previous child, to which accrued 5·7 per cent more of the 1951 maternities. Families with two previous children increased their share of all legitimate maternities by only 2·7 per cent, though relative to their original share this represents a very similar increase to that of the families with one previous child. The proportion of maternities in 1951 in which there had been no previous child, however, was less by 3·7 per cent (of total maternities) than in 1938. A comparison of the whole range of uncompleted families to which additions were made in 1951 with that of 1938 shows that maternities are accruing rather more than formerly to families with one or two previous children, and less to those with no previous children or with three or more previous children.

It should be reiterated that these figures do not relate to all families but are restricted to families to which additions were made in the year ; and the conclusion that in the latter families, middle sizes are relatively more numerous is not evidence that completed families will be similarly affected. It does however suggest that this may be happening, and it is interesting and useful to examine the implications of such a hypothesis.

If the distribution of families by completed size experiences a change by a diminution of the proportion at the largest sizes, it seems self evident, and may

in fact be demonstrated mathematically,\* that not only the average completed size of all families will decline, but so also will the average size of families to which additions are made in any year. What is not clear is that if there is a complementary decline in the proportion of families ultimately remaining at the smallest size, so that overall the average ultimate size of families experiences no change, there will be no similar complementary increase in the average size of families to which additions were made in the year. A simple example will illustrate this point. If, after family building had stabilized, a number of women who had previously had no children each bore one child, then the average *ultimate* or *completed* size of families would increase. But considering only the previous children of families to which additions were being made, the change would introduce a number of families with no previous children, and would thus *decrease* the average size of such families.

Thus the observed decrease in the average number of previous children of families to which additions are being made does not provide evidence that the average ultimate size of families is decreasing. It is in fact consistent with the suggestion that the average ultimate size may not be changing very much, though the distribution of sizes is tending to concentrate more closely about the average.

The size of family is influenced by both the age of the mother and the duration of her marriage. Table SS of the successive Parts II analyses the annual maternities by the age of mother, duration of her present marriage and the number of previous children surviving, dead, or stillborn, by her present husband. A comparison of the average number of previous children of mothers according to mother's age and the duration of her marriage for 1939, 1950 and 1951 is shown in Table XXIII.

From the distribution of the previous children shown in Table SS, it is clear that they could not all have been born within the period of the present marriage. The question asked of the informant at the registration of the birth was "the number of previous children by the mother's present husband" and the answer could therefore include any children, by the husband, born before marriage. An indication of the effect of the inclusion of such children can be inferred from the average number of previous children at duration under 1 year, since practically all such children must have been born before marriage, and there is no reason to suppose that the number of children born before marriage included at durations of one year or over were substantially different from those shown for durations under one year.

The average number of previous children increases progressively with duration of marriage for each age group, since the groups of mothers concerned at later durations have not only been married longer but were married at younger ages—the larger the duration at current ages, the younger the marriage age. Thus at the older ages (40 and over) in 1939, the difference between the 8.87 average number of previous children at durations 25–29 years and the 6.89 at durations 20–24, represents virtually the difference in average ultimate family size of women married at ages under 20 and 20–24, when the averages in each

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\* If in a stable state the number of families of ultimate size  $i$  is  $n_i$ , then the average number of previous children recorded at birth registration is given by :

$A/B \text{ (say)} = \frac{\sum_i \frac{(i-1)}{2} \cdot i \cdot n_i}{\sum_i i \cdot n_i}$ . If there is a shift of  $D$  families from size  $j$  to  $k$ , the average number of previous children becomes :

$[A + D/2 (k-j) (k+j+1)] \div [B + D (k-j)]$ . This is *less than*  $A/B$  if  $k < j$  and  $(k+j+1)/2 > A/B$  or if  $k > j$  and  $(k+j+1)/2 < A/B$ , that is to say if there is either a downward shift in family size at the large end of the range, or an upward shift at the small end.



**Table XXIII.—Average Number of Previous Children (surviving, dead or stillborn) by Present Husband, of 1939, 1950 and 1951 Mothers, distinguishing Age of Mother and Duration of Marriage, England and Wales**

Age	Duration of Marriage (years)															
	All Durns.*	0-	1-	2-	3-	4-	5-	6-	7-	8-	9-	10-14	15-19	20-24	25-29	30 and over
Absolute Size -1939																
All Ages†	1·39	·02	·18	·51	·78	1·05	1·28	1·54	1·80	2·07	2·35	3·12	5·05	6·87	8·87	10·62
16-	·13	·01	·38	·89	1·27	—	—	—	—	—	—	—	—	—	—	—
20-	·49	·01	·21	·64	1·02	1·42	1·77	2·08	2·43	2·52	—	—	—	—	—	—
25-	·94	·02	·12	·40	·68	1·00	1·30	1·66	2·05	2·41	2·83	3·13	—	—	—	—
30-	1·65	·06	·14	·42	·66	·87	1·07	1·30	1·55	1·90	2·23	3·23	4·82	—	—	—
35-	2·90	·11	·18	·54	·79	1·01	1·22	1·44	1·62	1·81	2·03	2·98	5·07	6·76	—	—
40 and over	4·64	·15	·20	·59	·92	1·16	1·36	1·64	2·00	2·27	2·43	3·11	5·05	6·89	8·87	10·62
-1950																
All Ages†	1·24	·02	·20	·59	·88	1·11	1·30	1·48	1·61	1·69	1·84	2·51	4·10	5·77	7·38	9·67
16-	·12	·00	·34	·88	1·26	—	—	—	—	—	—	—	—	—	—	—
20-	·46	·01	·20	·64	·99	1·28	1·53	1·85	2·15	2·18	—	—	—	—	—	—
25-	·91	·03	·17	·54	·84	1·08	1·28	1·49	1·67	1·84	2·13	2·74	—	—	—	—
30-	1·50	·06	·20	·57	·84	1·07	1·24	1·42	1·52	1·59	1·75	2·58	4·42	—	—	—
35-	2·43	·08	·21	·56	·86	1·10	1·33	1·48	1·56	1·65	1·74	2·39	4·17	5·73	—	—
40 and over	3·73	·10	·18	·50	·72	·96	1·23	1·44	1·79	1·74	1·73	2·48	3·88	5·78	7·38	9·67
-1951																
All Ages†	1·25	·02	·20	·58	·87	1·12	1·34	1·52	1·71	1·82	1·91	2·50	4·05	5·79	7·13	7·09
16-	·12	·01	·35	·90	1·30	—	—	—	—	—	—	—	—	—	—	—
20-	·47	·01	·19	·64	·97	1·31	1·61	1·86	2·25	2·27	—	—	—	—	—	—
25-	·92	·03	·16	·53	·81	1·08	1·32	1·53	1·80	1·86	2·17	2·73	—	—	—	—
30-	1·52	·05	·20	·55	·85	1·07	1·27	1·44	1·61	1·74	1·84	2·55	4·35	—	—	—
35-	2·45	·06	·19	·57	·89	1·11	1·33	1·53	1·66	1·75	1·78	2·41	4·14	5·77	—	—
40 and over	3·69	·06	·18	·53	·78	1·03	1·25	1·47	1·64	1·79	2·01	2·43	3·78	5·79	7·13	7·09
Size relative to 1939 taken as 100 -1950																
All Ages†	89	97	110	116	113	106	102	96	89	82	78	80	81	84	83	91
16-	92	68	89	99	99	—	—	—	—	—	—	—	—	—	—	—
20-	94	89	94	100	97	90	86	89	88	87	—	—	—	—	—	—
25-	97	126	139	135	124	108	98	90	81	76	75	88	—	—	—	—
30-	91	99	143	136	127	123	116	109	98	84	78	80	92	—	—	—
35-	84	70	118	104	109	109	109	103	96	81	86	80	82	85	—	—
40 and over	80	70	88	85	78	83	90	88	90	77	71	80	77	84	83	91
-1951																
All Ages†	90	89	106	114	112	107	105	99	95	88	81	80	80	84	80	67
16-	92	96	92	101	102	—	—	—	—	—	—	—	—	—	—	—
20-	96	89	92	100	95	92	91	89	93	90	—	—	—	—	—	—
25-	98	121	128	133	119	108	102	92	88	81	77	87	—	—	—	—
30-	92	76	142	131	129	123	119	111	104	92	83	79	90	—	—	—
35-	84	55	108	106	113	110	109	106	102	97	88	81	82	85	—	—
40 and over	80	41	91	90	85	89	92	90	82	79	83	78	75	84	80	67

\* Standardized to the 1939 distribution of mothers by age and excluding duration not stated.  
† Standardized to the 1939 distribution of mothers by duration and excluding age not stated.

case are not extended over all women marrying at these ages, but are restricted to those continuing their family building to the end of their reproductive lives.

When the figures for 1939 are read down the columns of the upper part of Table XXIII, comparisons, at each duration in turn, of the previous children of women married at different ages, show that after an initial decline with increasing marriage age the numbers increase at the older ages. The same feature is seen in 1950 and 1951 but is restricted to the longer durations. The families included in this table are only those to which additions were made in the year,

but it was shown in the Civil Text for 1946-50 in Table LXV on page 118 that, extending the average over all families except only the childless, the same initial decline and subsequent rise is seen at many durations. One factor contributing to this feature is the larger number of premaritally born children recorded with the rest of their family by women married at the older ages.

In the lower part of Table XXIII the average family size of the mothers of 1950 and 1951 are compared with those of 1939. The All Ages ratio, standardized for duration, was below par at durations under one year in both 1950 and 1951, suggesting a decline in premaritally born children as well as in those premaritally conceived, to which frequent reference has already been made in this text. At longer durations up to the sixth year, the mothers of 1950 and 1951 had had more previous children than those of 1939, the largest relative excess in each year being located in the third year of marriage at 16 per cent and 14 per cent respectively above the 1939 level. The rates then decline with duration until by the seventh year of marriage there is a deficiency compared with 1939. This deficiency is greatest at durations associated with the marriages of the beginning of the war, in respect of which family building will have been interrupted by the war more than that of any other marriages whether earlier or later. Thus the trough located at about 10 years duration, and indeed the decline to it from 5 years duration reflects no more than temporary war-time disturbances.

After the war the increase in birth incidence was partly due to births postponed by war conditions, i.e. either the separation of those married before or during the war, or the actual postponement of marriages. Thus these purely temporary influences extend also into shorter durations than 5 years. It has been mentioned already that for all ages combined the ratio to 1939 was highest in the third year of marriage in both 1950 and 1951. But if the separate ages are examined at that duration, bare parity, or even deficiency, is found in all age groups except 25-34 where, in both years, an excess over 1939 of more than 30 per cent is recorded ; and a similar concentration of high ratios at these ages is found in most other durations under six years. This relates to women aged 20 to 30 at the end of the war whose marriages were perhaps most likely to have been delayed by the war and supports the suggestion that even at the shorter marriage durations, corresponding to post-war marriages, a distorting after-effect of the war is present.

As compared with 1950, the 1951 ratios are seen in general to be nearer par. Where the 1950 ratio was above par, in general the 1951 ratio was lower ; where the 1950 ratio was below par the 1951 ratio was higher. This too suggests that distortion is present, but that the ratios are moving towards stability.

In any event, as has already been pointed out, a decline in the average size of families to which children are added in a year, does not necessarily imply a decline in the average ultimate size of families, and it could be caused by the distribution of families by size tending to concentrate more around the average size at the expense of the two extremes of very large and very small families. There is a further point in this connection which may be made. The largest families—of ten or more children—are capable of very considerable reduction to bring them down to the average of 2 or 3 ; each family could be reduced by 8 or more children. But the smallest families are so near to average that at most they could add 2 children per family or, in the extreme case, a childless couple could increase their family size by 3. It might be thought therefore that the probable gains in the small families would be more than offset by greater losses in the large families. This argument is fallacious because it ignores the possible expansion in the number of small families, as compared with large families, which can outweigh losses in gain per family. A simple example will suffice.



The 1951 Census One per cent Sample Table X.3 shows the following distribution by family size of married women aged 45-49 in England and Wales (i.e. those with, for all practical purposes, completed families).

	Number of Live-born children			
	0-2	3-4	5 and over	Total
Number of married women ..	8,487	2,426	1,121	12,034
Number of their children ..	8,916	8,115	7,352	24,383

If all the 1,121 married women with families of 5 or more children had had just 4 children each, that is a total of 4,484 instead of 7,352, the generation would have lost 2,868 children (7,352-4,484). But if, in addition, only one-third of the 8,487 married women with less than 3 children had had, not 3 children each, but just one more child, the 2,829 (8,487 ÷ 3) children gained would have compensated almost entirely for the loss of 2,868 from the curtailment of the largest families.

It is not to be expected that actual events will follow such a simple pattern, but this does demonstrate that quite a modest increase in the family size at the lower end of the scale can compensate for a substantial decrease in the numbers of the largest family sizes.

### First Maternities (Legitimate)

Of the 650,963 total legitimate maternities of 1951, the modified version of Table SS in Appendix B, Table 6, shows that the mothers in respect of 252,658 or 38·8 per cent had not had a previous live or stillborn child by their present husbands. The proportion was 42·9 per cent in 1938. After the decline in the war years, the proportion rose to a peak of 45·4 per cent in 1947 and has declined more or less steadily since.

The incidence of first born children is naturally at a maximum for recent marriages and thus the proportion of first maternities among all legitimate maternities will be raised immediately following a year of abnormally high marriage incidence. If distinction is made of mothers' ages the proportion of first maternities will be highest at the youngest ages, again because their marriages will be comparatively recent. The rapid decline with advance in mother's age and a comparison of the pre-war and post-war experience, and that of the disturbed period 1939-49 taken as a whole, are shown in Table XXIV.

**Table XXIV.—First Maternities [to existing ] marriages per 1,000 total legitimate maternities at each age, 1938 to 1951, England and Wales**

Mothers' age	1938	Average 1939-49	1946	1947	1948	1949	1950	1951
All Ages .. ..	429	433	431	454	426	410	393	388
Under 20 .. ..	890	900	913	912	898	885	868	861
20- .. ..	644	683	701	710	666	635	613	609
25- .. ..	469	450	464	470	414	382	362	358
30- .. ..	296	285	287	293	259	243	234	228
35- .. ..	166	182	194	202	186	181	170	163
40 and over ..	95	119	130	143	142	140	136	137

The decline since 1947 in the proportion of first maternities amongst legitimate maternities of mothers of all ages, may be seen in the first line of the table. The rate of decline is being slowed, the proportions in 1950 and 1951 being very similar. In the separate age groups, also, a similar pattern is seen in general, with a peak in 1947 above the 1938 level and a subsequent decline, apparently nearly exhausted, to below the 1938 level. The relationship between the 1951 and 1938 proportions is not the same at each of the various age groups, as the following statement shows.

	All ages	Under 20	20-24	25-29	30-34	35-39	40 and over
1951 proportions as a percentage of those of 1938 ..	90	97	95	76	77	98	144

The low proportions at 25-34 are outstanding compared with substantially higher values at the neighbouring ages. The explanation may be that this group of women, who were 20 to 30 when the war ended, not only had their family building interrupted by the war, but were, and are, sufficiently youthful to permit them to continue for some years attempting to make up deficiencies. If this explanation is correct, this feature is only temporary and will eventually disappear.

There have been other and permanent changes in marriage and family building habits which should eventually be reflected in the index under discussion—the proportion of first maternities. One such change is the lowering of the age at marriage, which should lower the proportion at each age, and may in fact be the major cause of the proportions in 1951 being generally lower than in 1938. A second change is that discussed in the previous section, namely the tendency for a decrease on the one hand in childlessness and on the other hand in the proportion of families of the larger sizes. The evidence was far from conclusive but, if this latter change does occur, it will tend to counteract the decline in the proportions of first maternities arising from the lowering of age at marriage. Other changes may be occurring, for instance in family spacing, which may influence these proportions, but it would be most difficult to measure either such a change, or its effect.

Family building tends to be concentrated in the few years immediately after marriage and the concentration will necessarily be accentuated when consideration is confined to first births or maternities. The extent of this concentration may be seen from Table XXV showing the numbers and distribution of first legitimate maternities by duration of marriage.

From the lower part of the table it may be seen that over three-quarters of first births are in the first three years of marriage ; 76·7 per cent in 1938, 78·1 per cent in 1950 and 76·8 per cent in 1951. Although these three proportions are very similar in magnitude, an examination of their constituent parts shows a difference to which attention has already been drawn in earlier sections, namely the decline since 1938 at durations under 8½ months, conventionally associated with premarital conceptions. In 1938 these accounted for nearly a quarter of all first legitimate maternities and in 1951 for less than one fifth. This matter has been discussed in detail elsewhere in this text, and no further comment is necessary here, except that this decline is not of a piece with the



Table XXV.—Numbers and Distribution by Duration of Marriage of First Maternities by existing husbands to married women of all ages, 1938 to 1951, England and Wales

Calendar Year	Duration of Marriage*												All Durations
	0-8½ mths.	8½-11½ mths.	1- year	2- years	3- years	4- years	5- years	6- years	7- years	8- years	9- years	10+ years	
	Numbers (hundreds)												
1938 ..	63,2	32,0	70,6	35,4	21,7	13,5	8,0	5,3	3,6	2,7	1,8	4,1	261,9
1939-49†	48,3	37,3	80,7	40,1	25,1	17,7	13,0	9,6	6,4	4,2	2,9	6,5	291,8
1946 ..	43,0	44,6	81,4	34,2	26,2	27,9	24,9	22,2	9,8	6,3	4,7	9,7	334,8
1947 ..	58,9	53,2	106,4	44,0	24,4	23,0	22,2	17,7	14,0	6,2	4,2	9,6	383,6
1948 ..	61,2	49,3	90,6	40,4	20,6	11,4	9,8	9,2	7,6	6,1	2,9	6,9	315,9
1949 ..	58,1	39,7	88,9	37,6	21,4	11,4	6,4	5,8	5,1	3,9	3,5	5,7	287,4
1950 ..	53,5	37,5	77,3	36,8	19,8	12,2	6,7	3,9	3,4	3,3	2,6	5,6	262,6
1951 ..	49,9	35,4	73,6	35,0	21,6	12,7	7,9	4,4	2,4	2,3	2,2	5,3	252,7
	Distribution per 1,000 total												
1938 ..	241	122	269	135	83	52	31	20	14	10	7	16	1,000
1939-49..	165	128	277	137	86	61	45	33	22	14	10	22	1,000
1950 ..	204	143	294	140	75	46	26	15	13	13	10	21	1,000
1951 ..	198	140	291	139	85	50	31	17	10	9	9	21	1,000

\* Durations 1- year, 2- years, etc., are more correctly 11½ months-1 year 11½ months, 1 year 11½ months-2 year 11½ months, etc.  
† Annual average.

other changes in the distribution at longer durations and it is therefore better to remove its influence by restricting the distribution to durations over 8½ months, as in the following statement.

Period	Duration of Marriage											
	All Dura- tions over 8½ months	8½-11½ months	years 1-	2-	3-	4-	5-	6-	7-	8-	9-	10+
1938 ..	1,000	161	355	178	109	68	40	27	18	14	9	21
1939-49 ..	1,000	153	331	165	103	73	53	40	26	17	12	27
1950 ..	1,000	179	370	176	95	58	32	19	16	16	12	27
1951 ..	1,000	174	363	173	106	63	39	22	12	11	11	26

The underlying tendency in the war and immediate post-war years to postpone births is clearly seen by the shift from shorter to longer durations in the distribution for 1939-49, as compared with the periods before and after. To a much less extent, a comparison of the distributions of 1950 and 1951 with that of 1938 shows the opposite effect, namely a shift from longer to shorter durations, that is to durations under two years. There are exceptions to the excess of the 1938 proportions at the longer durations over those of 1950 and 1951, namely at durations over 8 years in 1950 and over 9 years in 1951. In the case of the 1938 experience, these durations are affected by the abnormally low marriage incidence associated with the years of economic depression. In the case of both the 1950 and 1951 experiences they relate to the marriages of 1942 and earlier, the years of high marriage incidence associated with the outbreak of war. This suggests that the higher proportions at these durations in 1950 and 1951 are not attributable to a higher intensity per married woman at risk, but to greater numbers at risk.

In fact the incidence of marriage in the years since the outbreak of war has been subjected to such wide fluctuations that, not only at the durations to which

attention is drawn above, but to some extent over the whole range of durations, the comparison of pre-war and current distributions of first maternities is liable to be distorted by fortuitous differences in the numbers of married women at risk. A more enlightening analysis, and one freed from this effect, is provided by determining the proportion of each marriage cohort who have borne a first child at successive durations of marriage, and such an analysis is shown in Table XXVI.

**Table XXVI.—First Maternities per 1,000 Married Women of Successive Marriage Cohorts, of women marrying at ages under 45, not pregnant at date of marriage, England and Wales**

Marriage Cohort	Duration of Marriage									
	8½–11½ mths.	1– yr.	2– yrs.	3– yrs.	4– yrs.	5– yrs.	6– yrs.	7– yrs.	8– yrs.	9– yrs.
(a) Occurring Within the Married Duration Specified										
1937–38 ..	118	247	120	65	63	49	36	22	24	17
1938–39 ..	108	232	112	93	69	48	31	35	23	11
1939–40 ..	92	210	140	96	66	42	56	36	16	9
1940–41 ..	89	226	136	90	55	73	53	24	12	8
1941–42 ..	88	237	135	76	89	72	30	17	11	8
1942–43 ..	98	269	121	101	91	40	24	14	10	
1943–44 ..	121	259	146	107	51	29	17	12		
1944–45 ..	126	288	159	75	43	25	17			
1945–46 ..	135	335	128	69	40	26				
1946–47 ..	179	295	124	65	42					
1947–48 ..	154	279	117	69						
1948–49 ..	129	259	118							
1949–50 ..	128	258								
1950–51 ..	125									
(b) Accumulated Total to the End of the Marriage Duration Specified										
1937–38 ..	118	365	485	550	613	662	698	720	744	761
1938–39 ..	108	340	452	545	614	662	693	728	751	762
1939–40 ..	92	302	442	538	604	646	702	738	754	763
1940–41 ..	89	315	451	541	596	669	722	746	758	766
1941–42 ..	88	325	460	536	625	697	727	744	755	763
1942–43 ..	98	367	488	589	680	720	744	758	768	
1943–44 ..	121	380	526	633	684	713	730	742		
1944–45 ..	126	414	573	648	691	716	733			
1945–46 ..	135	470	628	697	737	763				
1946–47 ..	179	474	598	663	705					
1947–48 ..	154	433	550	619						
1948–49 ..	129	388	506							
1949–50 ..	128	386								
1950–51 ..	125									

In the upper half of the table are shown the proportions of women in each marriage cohort bearing a first child at each year of marriage up to the tenth. In the lower half these proportions have been accumulated from the left, and thus show the proportion of women in each cohort who have borne a first child by the end of the duration indentified. Thus 11·8 per cent of the 1937–38 cohort of married women had borne a first child by the end of the first year of marriage, 36·5 per cent by the end of the second year, 61·3 per cent by the end of the fifth year and 76·1 per cent by the end of the tenth year.



The building of a complete family is a process covering several or perhaps many years. A complete or partial interruption of this process for, say, six years will set back family building to an extent which cannot be made good for some years, if ever. Thus in Appendix B, Table 5, in which the average number of maternities per woman is shown for marriage cohorts, the impact of the war was seen to produce large shortfalls which are being repaired but slowly. The alternative measure of the proportion of married women who have borne a first child, employed in Table XXVI, is one from which the influence of war is eradicated more quickly. The effect of the war on the 1937-38 cohort will have been less upon the proportion of women who had borne a first child (the criterion of Table XXVI) than upon the average number of maternities per woman (the criterion of Table XIX). The 1942-43 cohort achieved parity with the 1937-38 cohort after only two years in Table XXVI compared with four years in the comparable (lower) section of Table XIX. After 9 years of marriage, 76.8 per cent of the 1942-43 cohort had borne a first child, a proportion slightly higher than that after 10 years of marriage of any earlier cohort for which records are available. The proportions were lower for the next two cohorts, but the 1945-46 cohort which, it has been suggested, contained a proportion of postponed marriages, recorded a proportion of 76.3 per cent who had borne a first child after only 6 years of marriage, almost as high as the proportion after 9 years of marriage of the 1942-43 cohort. This high fertility is hardly consistent with any hypothesis other than that the structure of this cohort is abnormal and little significance therefore attaches to the lower fertility of later cohorts.

It is too early yet to draw any conclusions about the final state at which this index of fertility will stabilize, but the decline from the peak proportions recorded by the 1945-46 cohort has almost been arrested with sufficient margin over the comparable fertility of the 1937-38 cohort to cover any further trivial fall. For example, 43.3 per cent of the 1947-48 cohort had borne a first child by the end of their second year of marriage. For the 1948-49 and 1949-50 cohorts the proportions were 38.8 and 38.6 per cent. The latter proportion was still substantially more than the comparable 36.5 per cent of the 1937-38 cohort.

### Birth Occurrences and Registration Time Lag

The statutory period allowed for registration of either a live birth or a still-birth is 42 days and as a consequence there has always been an appreciable time lag between the occurrence of a birth and its subsequent appearance in the registration records. In the past the time lag has been found to decrease markedly after the introduction of an incentive to register earlier, for example by the association of the issue of food ration books and Family Allowances with birth registration. Conversely registration has become more tardy when these incentives have been removed or have become less powerful.

The registration time lag at the beginning of each month is determined from a "sample," consisting of the first entries in that month in a fixed group of registration districts, selected haphazardly but constrained to cover the various regions of the country and both urban and rural districts. The figures shown below are the unweighted means of the time lags in days in the selected entries and refer to the beginning of the periods shown :

<i>First World War</i>									
1914	1915	1916	1917	1918	1919	1920	1921		
36.0	33.3	30.8	31.1	30.5	21.2	24.3	31.6		
<i>Second World War</i>									
		1939	1940-45	1946	1947	1948	1949	1950	1951
1st Quarter	..	32.6	17.2	12.0	9.3	8.0	8.2	8.7	10.9
2nd	..	31.7	15.6	9.0	8.2	8.0	7.5	8.3	9.6
3rd	..	31.3	14.2	9.0	8.4	7.0	7.5	9.2	9.5
4th	..	27.6	13.3	8.7	7.3	7.1	7.8	9.0	9.4

The method of calculation of these time lags is such that they may provide a biased estimator of the average national time lag at any particular time, but to show the relative changes from quarter to quarter—the purpose for which they were originally intended—the retention of the original areas has some merit, and it seems reasonable to suppose that the broad changes shown do reflect the true national experience.

In the First World War period, the decrease in the time lag as a consequence of food rationing was relatively slight and was more accentuated after the war had ended. Further, by 1921, three years after the war, the pre-war lag had been practically restored. The shortening of the interval in the Second World War was much greater and occurred more quickly but the lowest averages were again recorded after the war, in 1948, when food rationing became more stringent. The increase since 1948 has been slow and, although the incentive of food rationing will disappear, the continued association of birth registration and Family Allowances makes a return to pre-war practice unlikely.

The importance of these time lags arises from their influence on the difference between the number of births registered in a period and the number occurring in that period. Occurrences are usually the more appropriate statistics for fertility measurement but registrations are available sooner. The difference between the two is influenced by the time lag in two ways. A difference will occur, even though the time lag be constant, if birth incidence is changing ; and also, even though birth incidence be constant, if the time lag is changing. In practice both factors operate. The combined effect of these factors may be measured by the ratio of occurrences to registrations, as follows :

Year			Ratio	Year			Ratio
1939	..	..	.992	1946	..	..	1.001
1940	..	..	.972	1947	..	..	.993
1941	..	..	.986	1948	..	..	.998
1942	..	..	.996	1949	..	..	.999
1943	..	..	1.002	1950	..	..	1.008
1944	..	..	1.009	1951	..	..	.997
1945	..	..	.992				

### Seasonal Incidence of Births

The pre-war incidence of legitimate live births followed a regular annual cycle with a minimum in the fourth quarter (corresponding to conceptions in the first quarter) and a maximum in the second quarter (corresponding to conceptions in the previous third quarter). Table XXVII shows the quarterly distribution in 1939, a typical year. The war disturbances including sharp fluctuations in the birth rate distorted this pattern, but the table shows that by 1951 a return had been made to the seasonal periodicity of pre-war years.

The incidence of illegitimate births, less influenced by the war disturbances, has a minimum and maximum in the fourth and second quarters, like legitimate births, but differs in that the periodicity moves through a larger amplitude, and that the births of the first quarter (corresponding to the previous second quarter conceptions) markedly exceed those of the third quarter (corresponding to the previous fourth quarter conceptions).

Variations in the incidence of legitimate stillbirths are due to the combined effect of two factors, the seasonal incidence of all legitimate births, live and still, and seasonal variations in stillbirth rates, the former having the greater influence. Thus there is a strong tendency for the distribution to follow that of live births, but the effect of the generally higher stillbirth risk in winter months can be seen.



**Table XXVII.—Ratio of Quarterly Births to Average Quarterly Births taken as 100, 1939 and 1946 to 1951, England and Wales**

Period	Year						
	1939	1946	1947	1948	1949	1950	1951
Legitimate Live Births							
1st Quarter .. ..	99	86	109	105	102	104	103
2nd     "     "     "	106	99	106	103	105	104	107
3rd     "     "     "	101	105	97	99	100	98	99
4th     "     "     "	94	110	88	93	93	94	91
Year     "     "	400	400	400	400	400	400	400
Illegitimate Live Births							
1st Quarter .. ..	105	107	110	107	105	106	104
2nd     "     "     "	107	110	108	109	106	107	109
3rd     "     "     "	100	95	98	96	99	96	96
4th     "     "     "	88	88	84	88	90	91	91
Year     "     "	400	400	400	400	400	400	400
Legitimate Stillbirths							
1st Quarter .. ..	104	91	115	109	104	104	107
2nd     "     "     "	104	99	105	102	105	104	103
3rd     "     "     "	98	101	93	96	97	97	95
4th     "     "     "	94	109	87	93	94	95	95
Year     "     "	400	400	400	400	400	400	400

Since 1938, tabulations of births by month of occurrence have been shown in Table YY of Part II and permit a closer study of the seasonal incidence of births. The length of calendar months varies, and therefore to allow for this, Table XXVIII shows daily averages.

**Table XXVIII.—Relative 'Birth Incidence in Calendar Months, 1939, 1950 and 1951, England and Wales**

Month of Occurrence	Ratio of Monthly Daily Average to that of the Calendar Year, taken as 1,000								
	Legitimate Live Births			Illegitimate Live Births			Legitimate Stillbirths		
	1939	1950	1951	1939	1950	1951	1939	1950	1951
January ..	980	1,022	1,005	1,076	1,051	982	1,043	1,038	1,036
February ..	995	1,044	1,041	1,041	1,059	1,071	1,045	1,098	1,115
March ..	1,041	1,085	1,076	1,080	1,107	1,098	1,078	1,043	1,119
April ..	1,073	1,065	1,076	1,046	1,068	1,111	1,068	1,081	1,059
May ..	1,078	1,049	1,084	1,138	1,076	1,117	1,060	1,023	1,058
June ..	1,043	1,025	1,057	1,044	1,075	1,061	1,002	1,015	977
July ..	1,025	969	1,016	1,038	948	1,011	984	937	968
August ..	985	960	968	960	931	919	972	964	935
September ..	1,004	1,002	973	969	984	938	963	995	908
October ..	939	941	892	859	912	869	938	916	931
November ..	914	917	882	853	873	870	932	958	944
December ..	927	926	936	898	920	957	917	944	954
Year ..	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

The figures must be accepted with some slight reserve since the daily average is a sensitive index and there has not yet been a period of stable conditions (the annual birth incidence is still changing) to permit a clear pattern to emerge.

For legitimate live births, the table shows that in 1951, as in 1939, the daily average rose sharply until March, and then more slowly, a maximum being reached in May at some 8 per cent above the annual daily average. Thereafter a steep decline occurred interrupted only by a minor peak in September (corresponding to conceptions at Christmas when there is a concentration of new marriages). After a trough in November below the annual daily average by 9 per cent in 1939 and 12 per cent in 1951 the rising phase commences and continues into the following year as the cycle repeats itself.

The course of illegitimate births in both years exhibits the same features as that for legitimate births, including the minor upward fluctuation in September, but the amplitude of the cycle is greater. The peak is higher, the trough deeper and the connecting slopes steeper, so that a greater rise from January to February (from April to May conceptions) is recorded and a greater fall from June to July (from September to October conceptions).

A comparison of the ratio shown in Table XXVIII for legitimate stillbirths and live births shows the same general similarity as was indicated by the quarterly table, the higher stillbirth rates of the winter months exercising a perceptible influence.

Commentary on the differential seasonal incidence with mothers' age was included in the 1940-45 Civil Text on pages 106-108.

### Sex Ratio at Birth

In 1951 there were 1,060 male live births per 1,000 female live births. This ratio was almost the same as in the previous year and indeed in each year since 1945.

During the nineteenth century, the proportion of males to females in recorded live births declined from 1,049 per 1,000 for 1841-50, the first full decennium for which records are available, to 1,036 for 1891-1900. However various estimates\* which have been made of the extent of birth under-registration all show a greater degree of under-registration of births of girls than of boys. In these circumstances, if the true sex ratio remained constant, an apparent decline in the proportion of males to females would be shown as registration became more complete. It cannot be claimed that estimates of differential under-registration completely account for the apparent decline in the sex-ratio of live births, but sufficient grounds exist for the suggestion that the sex-ratio of all live births (registered and unregistered) did not undergo much change in the nineteenth century and was probably in the region of 1,035 to 1,040 males per 1,000 females, as deduced from records at the end of the century when registration was virtually complete.

There has been an upward but irregular trend in the present century with three distinct periods when the sex ratio was temporarily lifted above the long term trend. The first occasion was in the years 1919 to 1922, the second between 1934 and 1937 (approximately) and the third from 1942 to 1944. It has been suggested that the first and third of these increases are in some way attributable to the two World Wars and the second to the abnormal economic conditions of the 1930's, but no clear-cut chain of causation has been established. It might be conjectured that these three periods were alike in containing an

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\* E.g. Farr, W., 1871 *Census of England and Wales*, Vol. IV, p. 55 ; Glass, D. V., *Population Studies*, Vol. V, No. 1. July 1951.



undue proportion of first births to young mothers, in the marriage booms after the First World War, after the recovery from the economic depression and—with a delayed sequence in births perhaps attributable to war conditions—at the onset of the Second World War, but these suggestions are, at best, plausible. Attempts to produce convincing evidence have so far failed. For example it may be shown that the proportion of male births is higher for younger than older mothers, but the average age of mothers in 1942 to 1944 (the ages were not recorded until after 1938) was not sufficiently low to explain the increased sex ratio in that period.\*

Far more convincing arguments can be produced to explain the generally rising trend in the sex-ratio in the present century. Biologically sex is determined, not at birth, but at conception, and losses from abortion and stillbirths intervene between conception and live birth. Thus, since abortion and stillbirth rates are known to be higher for males, the sex ratio of live births will differ from that of conceptions. Further, reductions in abortion and stillbirth rates would produce increases in the sex ratio of live births, although the sex-ratio at conceptions might remain constant.

**Table XXIX.—Male Births per 1,000 Female Births distinguishing Legitimacy and whether Live or Still, Quinquennia from 1928 to 1950 and 1951, England and Wales**

Period	Legitimate Births			Illegitimate Births		
	Live	Still	Live and Still	Live	Still	Live and Still
1928–30 ..	1,044	1,231	1,051	1,037	1,280	1,049
1931–35 ..	1,051	1,207	1,057	1,044	1,153	1,049
1936–40 ..	1,054	1,183	1,059	1,050	1,117	1,054
1941–45 ..	1,061	1,158	1,064	1,074	1,173	1,078
1946–50 ..	1,061	1,169	1,063	1,056	1,238	1,061
1951 [ ..	1,060	1,179	1,062	1,060	1,277	1,066

From Table XXIX, which shows masculinity for live and stillbirths in both legitimate and illegitimate sections, it may be seen that the proportion of boys is consistently higher amongst stillbirths than live births, and this implies that stillbirth losses are greater for boys than girls. The effect of these losses may be removed by considering the sex ratio for live and stillbirths combined, shown in the table. From 1928–30 to 1951, the masculinity of live births rose from 1,044 to 1,060, that is by 16 points, while for live and stillbirths combined it rose from 1,051 to 1,062, that is by only 11 points. There may have been omissions of stillbirths when registration was introduced, with a sex differential similar to that of live births earlier when live birth registration commenced, and the first period 1928–30 ought not perhaps to be regarded as providing reliable statistics. However, between 1931–35 and 1951 masculinity rose by 9 points for live births, but by only 5 for live and stillbirths combined.

Statistics of abortions, similar to those for stillbirths, are not available, so that full correction for losses between conception and live birth cannot be made. It seems reasonable to assume, however, that if such correction could be made it would have the same type of effect as the correction for stillbirths, that is to say it would increase the masculinity, but by relatively more in earlier years of the century than in later years. It would tend still further to reduce the

\* See also Martin, W. J., *The Sex Ratio, The Medical Officer*, 10th April, 1948.

gradient. It is probable that little, if any, long-term change has occurred in the sex-ratio at conception.

Turning again to the nineteenth century, stillbirths were not recorded at that time, but stillbirth and infant mortality rates are highly correlated. For both 1841–50 and 1891–1900 the infant mortality rate was 153 per thousand, and it is probable that stillbirth rates may also have remained steady or at least changed but little. In these circumstances no mortality influence would be imparted to the masculinity of live births. The suggestion that true masculinity of live births may have remained constant in the nineteenth century is not therefore invalidated by these mortality considerations.

Masculinity varies with mother's age. A single year's births are not, however, adequate for analyses such as these, because the picture is blurred by chance fluctuations in the smaller numbers involved, but attention is drawn to the 1946–50 Civil Text, pages 134–136 where masculinity by mother's age is shown for the periods 1938–45 and 1946–50.

Multiple Births

During 1951 there were 693,514 births (live and still) from 684,407 maternities, the excess of 9,107 being the additional children born in multiple births. Tables CC and DD of 1951 Part II give details of the 9,005 maternities with multiple births and show that 8,905 produced twins, 98 triplets and 2 quadruplets, a total of 17,147 live and 865 stillborn children.

The frequencies of multiple maternities and births in the current year compared with the whole period since 1938 when the data were first tabulated are summarized as follows :

	All Multiple		Twins		Triplets	
	1938–50	1951	1938–50	1951	1938–50	1951
Multiple Maternities* per 1,000 :						
Total maternities ..	12·30	13·16	12·19	13·01	0·105	0·143
Multiple births per 1,000 :						
Total births .. ..	24·40	26·12	24·08	25·68	0·312	0·424
Live born children ..	23·57	25·31	23·27	24·89	0·290	0·403
Stillborn children ..	52·47	60·37	51·39	58·99	1·061	1·314

\* A maternity is treated as multiple whether or not the children involved are live or still-born.

The probabilities of a multiple event occurring will be the reciprocals of the rates shown above so that taking mothers of all ages together the chance of a multiple maternity was 1 in 81 in 1938–50 and 1 in 76 in 1951. Likewise 2 out of every 82 children born in 1938–50 were twins, triplets or quadruplets and 2 out of every 77 in 1951, the proportion being about twice as great amongst stillborn children as amongst live born.

The study of multiple births is restricted by the paucity of data since the number of such births is but a small proportion of the whole, and ratios and rates based on these small numbers are subject to considerable chance fluctuation from the underlying probabilities. When the commentary of pages 116–125 of the 1940–45 Civil Text was prepared, detailed statistics collected by virtue of the Population (Statistics) Act, 1938, had been collected in respect of over seven years, and this was the first time that so much information had been available in this country. It was therefore possible to study the variation of multiple birth rates with maternal age, to distinguish monozygotic and dizygotic twin rates, and within monozygotic twins to study sex differentials.



The addition of the data for 1946–50, available when the Civil Text for that period was prepared, was insufficient to permit more detailed analyses, and the commentary appearing on pages 136–139 of that text does no more than underline the more outstanding features of the previous analyses, so far as they were evident in the period 1946–50. The data of the single year 1951 do not allow the story to be carried any further.

Birth Rates in Different Parts of the Country

The birth rates of individual administrative areas in 1951 are given in Tables 12 and E. They are summarized in Table XXX, which shows, for each standard region, conurbation and density aggregate, live birth rates (separately for all births and for illegitimate births) and the ratio of the local to the national rate. In Table XXXI these rates are ranked in order of size.

Table XXX.—Birth Rates by Standard Regions, Conurbations and Density Aggregates, 1951  
(All the ratios were calculated before rounding off the rates).

Area	All Live Births					Illegitimate Live Births	
	Crude Rate per 1,000 Home population	Areal Comparability Factor	Adjusted Birth Rate	Ratio of Local to National Rate		Crude Rate per 1,000 Home Population	Ratio of Local to National Rate
				Crude	Adjusted		
ENGLAND AND WALES ..	15.5	1.00	15.5	1.00	1.00	0.75	1.00
Regions and Conurbations :							
Northern .. .. .	17.3	1.02	17.6	1.12	1.14	0.70	0.93
Tyneside Conurbation .. ..	17.3	0.98	16.9	1.12	1.09	0.68	0.91
Remainder of Northern .. ..	17.3	1.04	18.0	1.12	1.16	0.71	0.94
East and West Ridings .. ..	15.8	1.01	15.9	1.02	1.03	0.78	1.04
West Yorkshire Conurbation .. ..	15.5	1.00	15.5	1.00	1.00	0.89	1.18
Remainder of East and West Ridings .. .. .	16.0	1.02	16.3	1.03	1.05	0.70	0.94
North Western .. .. .	15.9	1.00	15.9	1.03	1.03	0.78	1.04
South East Lancashire Conurbation .. ..	15.7	0.97	15.2	1.01	0.98	0.87	1.17
Merseyside Conurbation .. ..	18.6	0.98	18.2	1.20	1.18	0.94	0.26
Remainder of North Western .. ..	14.6	1.03	15.0	0.94	0.97	0.60	0.81
North Midland .. .. .	15.9	1.02	16.2	1.03	1.05	0.79	1.06
Midland .. .. .	16.2	0.99	16.0	1.04	1.03	0.71	0.96
West Midland Conurbation .. ..	16.3	0.97	15.8	1.05	1.02	0.69	0.92
Remainder of Midland .. ..	16.0	1.02	16.3	1.04	1.06	0.74	0.99
Eastern .. .. .	15.2	1.04	15.8	0.98	1.02	0.74	0.98
London and South Eastern .. ..	14.3	0.95	13.6	0.92	0.88	0.75	1.00
Greater London .. .. .	14.4	0.92	13.3	0.93	0.86	0.76	1.02
Remainder of South Eastern .. ..	13.9	1.06	14.7	0.90	0.95	0.72	0.96
Southern .. .. .	15.4	1.04	16.0	1.00	1.04	0.85	1.13
South Western .. .. .	14.9	1.05	15.7	0.97	1.01	0.73	0.98
Wales .. .. .	16.0	1.03	16.4	1.03	1.06	0.60	0.81
Wales I .. .. .	16.2	1.02	16.5	1.05	1.07	0.55	0.73
Wales II .. .. .	15.4	1.07	16.4	0.99	1.06	0.73	0.98
Density Aggregates :							
Conurbations .. .. .	15.4	0.95	14.7	1.00	0.95	0.79	1.06
Areas outside the conurbations :							
Urban areas with populations of 100,000 and over .. ..	15.8	1.00	15.8	1.02	1.02	0.81	1.08
Urban areas with populations of 50,000 and under 100,000 .. ..	15.3	1.02	15.6	.99	1.01	0.81	1.09
Urban areas with populations under 50,000 .. .. .	15.5	1.03	15.9	1.00	1.03	0.68	0.91
Rural Areas .. .. .	15.4	1.08	16.6	0.99	1.07	0.67	0.90

**Table XXXI.—Ranking Comparison of Birth Rates in Regions, Conurbations and Density Aggregates, 1951\***

Area	All Live Births		Illegitimate Live Births	
	Crude	Adjusted	Crude	Adjusted (see text)
Conurbations and Remainders of Regions				
Tyneside Conurbation .. .. .	2½	3	15	15
Remainder of Northern Region .. ..	2½	2	12	11
West Yorkshire Conurbation .. ..	10	13	2	1
Remainder of East and West Ridings ..	7	7	13	9
South-East Lancashire Conurbation ..	9	14	3	2
Merseyside Conurbation .. .. .	1	1	1	7½
Remainder of North Western Region ..	15	15	16	16
North Midland Region .. .. .	8	8	5	3
West Midland Conurbation .. .. .	4	10½	14	13
Remainder of Midland Region .. ..	6	6	7	5
Eastern Region .. .. .	13	10½	8	6
Greater London .. .. .	16	17	6	14
Remainder of South Eastern Region ..	17	16	11	12
Southern Region .. .. .	11	9	4	4
South Western Region .. .. .	14	12	9½	7½
Wales, Region I .. .. .	5	4	17	17
Wales, Region II .. .. .	12	5	9½	10
Density Aggregates				
Conurbations .. .. .	3	5	3	3
Areas outside conurbations :				
Urban with population 100,000 or over	1	3	2	1
Urban with population 50,000–100,000	5	4	1	2
Urban with population under 50,000 ..	2	2	4	5
Rural .. .. .	4	1	5	4

\* In accordance with the usual convention, ties are given the mean of the ranks in question ; thus where two areas have equal rates which are the highest but one, they are both given rank 2½ (the mean of 2 and 3), and the next area rank 4.

Comparisons of the crude rates between different areas are not strictly valid, since they take no account of the varying sex-age composition of the population of the different areas. To overcome this difficulty in the case of all live births an approximate adjustment may be made by multiplying the rates by the areal comparability factors (A.C.F.s) introduced in 1949 and described in the Civil Text volume for 1946–50. The nature of this correction has to be kept in mind in interpreting the adjusted rates. The A.C.F. simply allows for the varying proportion of women of child-bearing age in the aggregate local population, but not for any other factors, e.g. the proportion of these women who are married, which may have some bearing on whatever problem is being



considered. The adjustment is thus not applicable to legitimate or illegitimate birth rates taken separately. However, 1951 being a year for which census information is available, it is possible to get a comparable measure of illegitimate birth incidence by relating the number of illegitimate live births in each of the areas in Table XXXI to the number of unmarried (single, widowed or divorced) women aged 15–44 in that area as given by the Census one per cent Sample. The ranks of these rates are shown in the last column of the table.

**All Live Births.**—The Merseyside Conurbation has the highest rates among the regions, both crude and adjusted, while Greater London and the Remainder of the South Eastern Region have the lowest. But the relatively low crude rate of Wales II (North and Central Wales) and the relatively high one of the West Midland Conurbation are both due to the peculiar sex-age structure of their populations ; adjustment raises the former from twelfth to fourth place and lowers the ranking of the latter from 4 to 10½.\* That for the South-East Lancashire Conurbation is reduced from 9 to 14.

Among density aggregates the crude rate is highest for the urban areas (outside conurbations) with a population of 100,000 or more, and lowest for those with 50,000 to 100,000 ; but the adjusted rates are roughly in reverse order of urbanization, the rural districts having the highest and the conurbations the lowest rate.

**Illegitimate Live Births.**—Among the regions Wales I retains its place as that with the lowest illegitimacy rate whether crude rates are used or the population structure taken into account, and the West Yorkshire Conurbation is near the top, the adjustment raising it from second to first place. The rank of the Merseyside Conurbation, however, is reduced from 1 for the crude to 7½ for the adjusted rate, and that of Greater London from 6 to 14.

Among density aggregates the adjustment makes little difference. The rates for the smaller urban and the rural areas are very similar and are the lowest, while those for the larger urban areas outside conurbations are the highest.

### Stillbirths

The registration of stillbirths in England and Wales began on 1st July, 1927, when the Births and Deaths Registration Act, 1926, came into operation. The Statistical Reviews, Part II, show numbers of stillbirths in England and Wales as a whole annually by sex and legitimacy (Table B), and quarterly in total (Table D), from 1927. Table E1 gives annual totals of stillbirths for the main regions, density aggregates, metropolitan and county boroughs and administrative counties, and starting in 1949, Table E gives the same information for all county districts.

Under the Population (Statistics) Act, 1938, additional information has been collected at the registration of births, including stillbirths, and detailed tabulations of stillbirths by legitimacy, mother's age, and order of birth appear in the Fertility Analyses of the Annual Reviews, Part II.

The secular trend of stillbirth rates and their geographical variation are both discussed in that part of this Text which deals with mortality (pages 110–114). The effects of multiple maternities, age of mother and birth order were amply discussed in the Civil Text for 1946–50 pages 141–144 ; treatment of such aspects as these requires the provision of data for several years in order that the numbers should be sufficiently large to justify analysis. The statistics for 1951 do not increase the available data to an extent justifying a fresh analysis and a few years must elapse before these topics can be profitably discussed again.

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\* The West Midland Conurbation and the Eastern Region tie for 10th and 11th place.

## MARRIAGES

During 1951 there were 360,624 marriages registered in England and Wales. This compares with 358,490 marriages in 1950, 361,768 in 1938 and 359,160 in 1937. As a result of the special influences of the war of 1939–45 the annual average number of marriages in the period 1939–49 was 384,039.

In relation to the total population, of all ages and marital conditions, the experience of 1951 represents a rate of 16·4 persons married per 1,000 population compared with 16·3 in 1950, 18·1 in 1939–49, 17·6 in 1938 and 17·5 in 1937. The numbers of marriages and rates per 1,000 population for calendar years are given in serial form in Tables B and C of Part II and in Table D for calendar quarters. The figures for each year from 1936 to 1951 have been extracted from these tables and are shown in Table XXXII, from which it may be seen

**Table XXXII.—Marriages and Marriage Rates, 1936 to 1951, England and Wales**

	Number of Marriages (in thousands)					Persons married per 1,000 population (in the form of annual rates)				
	Year	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Year	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
1936	355	50	101	115	89	17·4	9·8	19·8	22·5	17·3
1937*	359	71	80	121	87	17·5	14·0	15·7	23·5	16·8
1938	362	52	102	117	91	17·6	10·3	19·9	22·4	17·5
1939–45*	381	75	99	110	97	18·1	14·6	18·8	20·7	18·3
1946	386	78	101	110	96	18·0	14·8	19·0	20·4	17·9
1947	401	75	109	119	97	18·6	14·2	20·3	22·0	18·0
1948*	397	95	93	123	85	18·2	17·6	17·2	22·5	15·6
1949	375	82	96	114	83	17·1	15·1	17·5	20·7	15·1
1950	358	87	81	115	76	16·3	16·0	14·7	20·7	13·7
1951*	361	110	66	111	73	16·4	20·3	12·1	20·2	13·3

\* In years so marked, Easter fell in the first quarter. During the years 1939 to 1945, Easter fell in the first quarter in 1940 only.

that in the post-war period, a peak was reached in 1947 with a rate of 18·6 persons married per 1,000 population after which the rate declined to 16·3 in 1950 and the rate of 16·4 for 1951 is not significantly different from this.

Marriage rates were rising before the Second World War and were maintained at a high average level during the war and immediate post-war years. The high incidence of marriage extending over such a long period has tended to deplete the non-married component of the population. It is to the latter—the population available for marriage—that marriages should be related and in Table XXXII a comparison is made between marriage rates based on the total population of all ages and on the non-married population aged 15 and over extracted from Table C of Part II.

The marriage rate in 1951 per 1,000 population of all ages was virtually the same as in 1950 both rates being 7 per cent below that of 1938. In contrast



**Table XXXIII.—Marriage Rates per 1,000 Population of all ages and per 1,000 non-married population aged 15 and over by sex 1938, 1939–49, 1950 and 1951, England and Wales**

Period	Per 1,000 Population of all ages		Per 1,000 Non-married Population aged 15 and over			
	Rate	Ratio to 1938 rate taken as 100	Males		Females	
			Rate	Ratio to 1938 rate taken as 100	Rate	Ratio to 1938 rate taken as 100
1938	17.6	100	61.2	100	47.8	100
1939–49*	18.1	103	68.8	112	53.0	111
1950	16.3	93	66.1	108	51.7	108
1951	16.4	93	69.5	114	52.3	109

\* Annual averages.

the rate in 1951 when related to the marriageable population was for males, 6 per cent above that of 1950 and 14 per cent above that of 1938, and for females was 1 per cent above that of 1950 and 9 per cent above that of 1938. It will be shown later that some decline from these high rates which have been maintained for so prolonged a period must be expected, but the decline had not begun in 1951.

**Marriage Analyses by Sex, Age, etc.**

The marriage rates considered in the preceding paragraphs have taken no account of the ages at which the marriages took place nor of the prior marital condition of those who were married. Crude marriage rates based on the total population serve many administrative and social needs and have the sanction of custom derived from the fact that they are readily ascertained and are in some circumstances the only rates available. Rates based on the number of non-married males and females over 15 years of age provide, as already explained, a more direct measure of marriage trends but, in order adequately to measure the changing incidence of marriage, further analyses are required to distinguish sex, age and prior marital condition differentials involved. Estimates of the population by sex, age and marital condition have been made annually and the marriages by single years of age for each sex and condition are given in Table G of successive Parts II. Marriage rates for each sex and age, distinguishing first marriages from remarriages, are shown in Table XXXIV.

From this table it may be seen that the rise in marriage rates (per 1,000 at all ages over 15) from 1950 to 1951, as shown in Table XXXIII, does not apply equally at each age and for each marital condition. At the younger ages, remarriage rates for both sexes have declined, but this is not unexpected. Following the spate of divorces in 1947, re-marriage rates at the younger ages soared to a peak in 1947–48 and have since declined towards a more stable level. It will be noted that first marriage rates have not only increased at each age and for both sexes but the rates have increased relatively more at younger ages than at older ages.

Lower marriage rates than those experienced in 1951 could maintain in the population the currently high proportion who have been married. The persistence of the marriage incidence of 1951 would therefore appear to imply a further increase in the proportion married ; and a further lowering of the

**Table XXXIV.—Annual Marriage Rates per 1,000 Bachelors, Widowers and Divorced Men, Spinsters and Widows and Divorced Women respectively, in each of several age periods, 1931, 1938, 1939–1949, 1950 and 1951, England and Wales**

Year	Annual marriage rate per 1,000 in each age group.						Marriage rate per 1,000 population over 15 in each class	Ratio to corresponding rate for 1938 taken as 1,000	Marriage rate which would have resulted had the 1938 age rates been in operation	Ratio of actual marriage rate (col. 8) to rate in previous column (10)
	15–	20–	25–	35–	45–	55 and over				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
BACHELORS										
1931	3.2	72.6	141.3	49.8	16.3	5.5	56.0	864	65.0	862
1938	3.2	87.0	160.6	57.0	18.5	4.8	64.8	1,000	64.8	1,000
1939–49	6.5	112.3	160.0	62.2	21.0	5.1	71.4	1,102	63.1	1,132
1950	5.6	113.8	148.2	51.6	19.5	4.9	67.6	1,043	62.7	1,078
1951	6.2	126.4	154.2	52.5	20.0	5.0	71.6	1,105	61.9	1,157
WIDOWERS AND DIVORCED MEN										
1931	—	131.7	185.9	133.5	67.3	15.0	35.9	942	40.6	884
1938	—	153.6	219.8	152.6	79.1	15.9	38.1	1,000	38.1	1,000
1939–49	—	187.9	341.5	207.6	105.0	17.6	49.5	1,299	37.8	1,310
1950	—	431.0	415.7	242.5	118.6	18.1	58.2	1,528	39.2	1,485
1951	—	320.0	401.2	244.2	124.0	19.4	58.0	1,522	38.4	1,510
SPINSTERS										
1931	17.0	106.4	96.6	21.3	7.8	2.2	51.6	840	67.2	768
1938	22.6	147.9	117.9	22.0	8.6	2.0	61.4	1,000	61.4	1,000
1939–49	36.7	190.9	118.7	29.0	10.2	2.0	69.5	1,132	56.3	1,234
1950	39.3	208.9	123.7	29.2	10.3	2.1	69.4	1,130	52.1	1,332
1951	40.8	219.9	127.0	30.7	10.6	2.2	71.7	1,168	51.4	1,395
WIDOWS AND DIVORCED WOMEN										
1931	—	121.9	107.0	36.5	14.1	2.2	9.8	961	11.9	824
1938	—	197.1	131.2	50.1	14.7	2.5	10.2	1,000	10.2	1,000
1939–49	—	277.6	199.5	70.6	21.3	2.7	15.3	1,500	10.7	1,430
1950	—	336.8	229.3	83.6	27.2	2.9	18.1	1,775	11.1	1,631
1951	—	328.5	233.1	84.6	28.5	3.0	17.0	1,667	10.2	1,667

average age at first marriage must accompany the concentration of recent increases at the lower ages, which may be seen more clearly in Table XXXV.

A summary of the changes in marriage rates in the various age groups is shown in column (9) of Table XXXIV in the form of a comparison of the crude all-ages rate with that of 1938 and in column (11) as a similar but age standardized comparison.

The crude first marriage rate in that table for bachelors was in 1950 4.3 per cent above and in 1951 10.5 per cent above that of 1938, while the spinster rate was in 1950 13.0 per cent above and in 1951 16.8 per cent above that of 1938. The age standardized comparison, however, shows greater excesses in 1950 and 1951, namely 7.8 per cent and 15.7 per cent for bachelors and 33.2 per cent and 39.5 per cent for spinsters. This greater movement of the age standardized rates arises from a relative lack of young bachelors and spinsters in the population in 1950 and 1951 compared with 1938 resulting from their depletion by the high bachelor and spinster marriage rates of the intervening period, despite continual replenishment by the new generations attaining marriageable age.



**Table XXXV.—Ratio of Marriage Rates for Bachelors, Widowers and Divorced Men, Spinsters, Widows and Divorced Women, to those of 1938 taken as 100, by age, 1931, 1939–1949, 1950 and 1951, England and Wales**

15–	20–	25–	35–	45–	55 and over	All Ages*	Period	15–	20-†	25–	35–	45–	55 and over	All Ages*
BACHELORS							1931 1938  1939–49  1950 1951	WIDOWERS AND DIVORCED MEN						— —  — —  — —
100	83	88	87	88	115	86		—	—	85	87	85	94	88
100	100	100	100	100	100	100		—	—	100	100	100	100	100
203	129	100	109	114	106	113		—	—	155	136	133	111	131
175	131	92	91	105	102	108		—	—	189	159	150	114	149
194	145	96	92	108	104	116		—	—	183	160	157	122	151
SPINSTERS							1931 1938  1939–49  1950 1951	WIDOWS AND DIVORCED WOMEN						— —  — —  — —
75	72	82	97	91	110	77		—	62	82	73	96	88	82
100	100	100	100	100	100	100		—	100	100	100	100	100	100
162	129	101	132	119	100	123		—	141	152	141	145	108	143
174	141	105	133	120	105	133		—	171	175	167	185	116	163
181	149	108	140	123	110	140		—	167	178	169	194	120	167

\* Age standardised.  
† Based on small numbers.

This feature is more marked for spinsters than for bachelors. It is more evident in 1951 than in 1950, indicating that it is a continuing movement.

Re-marriage rates of the widowed and divorced taken together are weighted means of the separate rates for widowed and divorced, the weighting depending upon the relative numbers of each class. As a consequence of the quadrupling of the incidence of divorce since the war, as compared with pre-war experience, the remarriage rates of the divorced are exerting a much stronger influence upon the combined rate, particularly at the younger ages. Since the remarriage rates of the divorced are also several times greater than those of the widowed, this is leading to a considerable inflation of remarriage rates of the divorced and widowed when combined. This is the significance to be attached to the substantial increase in these rates since 1938 ; the crude comparison gives increases in 1950 and 1951 of 52·8 per cent and 52·2 per cent for widowers and divorced men and 77·5 per cent and 66·7 per cent for widows and divorced women ; the age standardized comparison gives 48·5 per cent and 51·0 per cent for widowers and divorced men and 63·1 per cent and 66·7 per cent for widows and divorced women for the two years.

The percentage increases for age-standardized rates are below those of crude rates indicating that the related population at risk is comparatively youthful. This may be attributed to the large growth in numbers of divorced persons since the war, not all of whom have remarried. However these differences in percentages are not so marked in 1951 as in 1950 (in fact for females age standardization does not reduce the percentage increase since 1938) and this is evidence of depletion of the younger groups by remarriage, and natural ageing of the remainder.

**Marriages of Minors**

Of the total marriages registered in 1951, those of 22,401 males and 92,422 females related to minors. These figures compare with 20,391 males and 88,624 females in 1950 and 12,164 males and 59,268 females in 1938. There was a normal excess of females in 1951 ; they outnumbered males by 4·1 to 1,

compared with 4.3 to 1 in 1950 and 4.9 to 1 in 1938. The increase in the marriage of male minors during the war lowered the proportion over the period 1939-49 to 3.6 to 1.

The bridegroom was a minor in 6.2 per cent of all marriages in 1951, greater than the proportion of 5.7 per cent in 1950 and well above the 1938 figure of 3.4 per cent, but below the 1939-49 proportion of 6.8 per cent. The corresponding proportions for brides were : 1951 25.6 per cent ; 1950 24.7 per cent ; 1938 16.4 per cent ; and 1939-49 24.2 per cent. In the case of both bridegrooms and brides, therefore, the 1951 proportions are larger than those of 1950.

These proportions and also marriage rates for minors are given in Table XXXVI, which shows, in columns (6) and (7), that marriage rates of minors in 1951 were 125 per cent and 96 per cent above those of 1938 for males and females respectively. These are much greater increases in marriage rates than those associated with adult ages during the same period.

**Table XXXVI.—Marriages of Minors. Proportions to all Marriages Marriage Rates, and the Ratio of these Rates to that for 1931, 1938, 1939-49, 1950 and 1951, England and Wales. 1938**

Year	Marriages of Minors per 1,000 marriages of all ages		Marriage rates per 1,000 non-married population aged 15-20		Ratio of Marriage rates in Cols. (4) and (5) to corresponding rate in 1938 taken as 100	
	Males	Females	Males	Females	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1931	43.5	158.5	6.7	24.8	112	81
1938	33.6	163.8	6.0	30.5	100	100
1939-1949	68.1	242.1	13.9	54.2	232	178
1950	56.9	247.2	12.2	58.5	203	192
1951	62.1	256.3	13.5	59.7	225	196

### Marriage Incidence at Reproductive Ages

The enhanced importance of the study of population growth lends special interest to the influence of the marriage rate movement upon fertility. The Population (Statistics) Act of 1938 enabled the births of all children after 30th June, 1938, to be related to the ages and dates of marriage of their mothers. In the Text of the Review for 1938-39, the first dealing with the new records, a brief review was made of the nature of this influence of marriage incidence and of the changes that had taken place prior to 1939, both in the female marriage rates and in the proportion of married females in the community, at different ages within the reproductive age period. In that Text, the basic data, comprising the numbers of married and non-married women between the ages of 15 and 49, the proportions married, the numbers of women marrying and their relation to the non-married class, were assembled in the form of individual years' records back to 1911, together with earlier records at decennial census periods back to 1851, the first census year at which the marital conditions of the population were distinguished. In the Civil Text for 1940-45 these records for females were continued up to the end of 1945 and at the same time similar records were added for males, in decennial form between 1851 and 1931, and thereafter in individual years until 1945. In the Civil Text for 1946-50



records for both sexes for those years were included and in the present text in Appendix B are the similar records for 1951.

**Marriage Rates.**—It was customary before 1946 to base the main discussion of the marriage trends at the reproductive ages on all marriages, whether first or remarriages. What is of primary interest, however, is the establishment of additional marriages, that is to say first marriages, since remarriages do no more than mitigate the effect of earlier disruptive forces, whether mortality or divorce. It was shown in the 1946–50 Civil Text that the earlier practice, in which remarriages were included, was justified in that not only the changes from year to year, but the actual marriage rates for the whole non-married female population were, at the reproductive ages, negligibly different from those for spinsters alone.

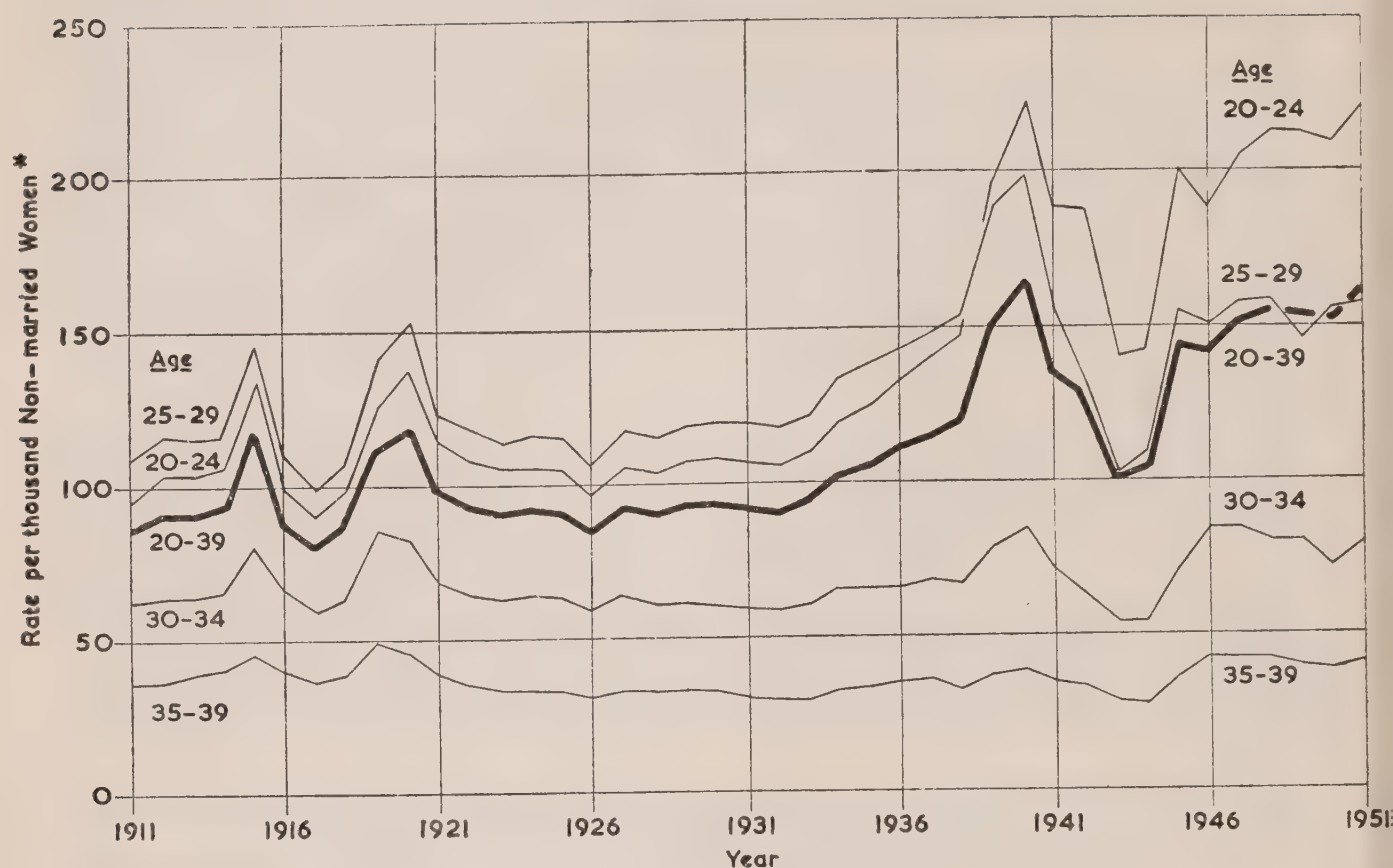
The rising incidence of divorce during the war and the abnormally high incidence in post-war years has increased the distortion which the inclusion of remarriages would impart, to a greater extent than can be tolerated. In Table XXXVII are set out All Marriage rates for 1911, 1931 and 1938 and First Marriage rates for these years and single years thereafter to 1951, from which the distortion prior to 1938 may be judged. Diagram 1 displays a continuous record of age marriage rates from 1911 to 1951, the rates shown from 1911 to 1937 being based on All Marriages and those from 1938 on First Marriages.

**Table XXXVII.—Marriage Rates for Females, by age, 1911, 1931 and 1938 to 1951, England and Wales**

Period	Age							Aggregates	
	15–19	20–24	25–29	30–34	35–39	40–44	45–49	20–39	15–49
	All Marriages per 1,000 Spinsters, Widows and Divorced Women								
1911	11.2	95.9	109.8	62.6	35.5	22.0	14.8	86.9	54.0
1931	16.9	106.5	119.8	59.6	31.0	18.0	12.6	92.8	57.8
1938	22.6	148.1	154.4	69.9	37.9	21.5	13.8	119.0	71.2
	First Marriages per 1,000 Spinsters.								
1911	11.2	97.1	109.8	59.2	29.2	16.2	10.4	88.7	54.6
1931	17.1	106.8	119.1	57.2	27.0	14.5	9.6	93.6	59.3
1938	22.6	147.9	154.0	67.2	33.1	16.8	10.6	119.7	72.7
1939	32.0	197.6	188.7	78.4	37.2	18.6	11.5	150.8	90.3
1940	38.4	222.8	198.8	84.7	39.1	20.9	12.0	164.8	100.4
1941	36.3	188.9	155.1	70.3	35.1	20.6	12.1	136.5	85.0
1942	38.9	187.4	133.2	63.0	33.7	20.2	12.3	129.8	82.3
1943	34.2	141.2	101.7	54.0	28.1	17.6	11.7	100.6	65.6
1944	33.1	143.1	109.9	53.5	27.9	17.1	11.3	104.3	67.1
1945	40.0	200.6	155.6	71.4	35.4	20.2	13.0	144.4	89.9
1946	33.9	189.0	150.7	84.5	42.3	22.9	14.4	142.5	86.4
1947	36.7	205.5	157.7	85.1	42.5	22.8	13.6	152.1	91.1
1948	39.4	212.5	158.1	81.3	42.7	22.6	13.4	156.0	92.9
1949	40.5	212.0	145.6	81.8	40.4	21.3	13.1	153.9	91.3
1939–49*	36.7	191.0	150.5	73.5	36.8	20.4	12.6	139.6	85.7
1950	39.3	208.9	156.0	72.9	38.7	20.3	12.7	152.5	89.4
1951	40.8	219.9	157.7	78.3	40.5	21.7	12.9	160.9	93.3

\* Annual Averages.

Diagram 1.



\* 1911-37 : All marriages per 1,000 spinsters, widows, and divorced women.  
1938-51 : First marriages per 1,000 spinsters.

**Marriage Rates\* for Women, by age, 1911 to 1951, England and Wales.** (See Text.)

Before considering particularly the experience of the current year, the opportunity may be taken to draw attention again to the salient features of the past, which the graphical representation of Diagram 1 demonstrates especially clearly. The history of marriage rates for women before 1911, when the diagram commences, is, briefly, that a long and more or less steady decline brought the rates down from 1873, when the highest rate in the 19th century was recorded, to 1909, when the lowest rate up to that time was recorded. Rates rose slightly from 1909 to 1914, when the trend became obscure owing to the wide fluctuations associated with the First World War. After the war no clear trend was observed until 1932, when a steady improvement began and was continued until 1938. At this point judging by the fragmentary evidence available, a full recovery had been made to the 1873 peak. The fluctuations of war again intervened to obscure the trend but, as may be seen from Table XXXVII, the annual average rates over the disturbed period of 1939-49 were, at the aggregated ages, substantially in excess of those for 1938, indeed for almost every individual age group the 1939-49 average rates exceed those for 1938. Generally the 1950 rates, whilst above the 1939-49 averages, were below those of 1949, indicating that, although very high, the rates were still declining from the post-war peak. The 1951 rates, however, show a slight rise above those of 1950, suggesting that this decline has been halted.

The marriage history of recent years is remarkable in that for nearly 15 years marriage rates on average have been maintained above the highest level ever reached in the 19th century, even for a single year. This maintenance of high marriage rates over a long period produces important changes. Under such circumstances the population is depleted more and more of its non-married element, and consequently persons whose inclinations or health do not favour marriage form an increasing proportion of those remaining nominally at risk.



Even the maintenance of constant marriage rates by those more appropriately regarded as at risk would not in the face of this inflation of the denominator of the rates prevent a decline in the rates calculated on the basis of all non-married of marriageable age. For this reason a decline in nominal marriage rates was expected and indeed still is ; the rise in the rates in 1951 is all the more significant.

During the nineteenth century the marriage rate for the age group 20–24 always exceeded that for the next older group 25–29. In 1901 this position was reversed, the older group recording a higher rate for the first time. Diagram 1 shows that the younger women regained their earlier lead in 1939 and have retained it. As the majority of brides’ ages lie between 20 and 30, changes in the relative marriage incidence in the two quinary age groups making up this range, 20–24 and 25–29, are indications of changes in the average age at marriage, which has an influence of some importance on the ultimate size of families. After 1939 the younger age group increased its lead over the older, and a wide gap opened up between them so rapidly that some part must be attributed to abnormal conditions associated with the war. However, at least one of the forces which has enabled girls to marry earlier—the changing relationships between the numbers of males and females—may be assumed to be of a persistent nature, and is associated with the maintenance, and even widening, of the gap.

**Factors influencing Marriage.**—The nature and the probable future course of factors leading to the rise in marriage rates were discussed in the Civil Text Volumes of 1940–45 on pages 38–40 and 1946–50 on pages 40–42. It was shown that, while the ratio of males to females at ages 15–44 in the total population had been rising continuously since 1921, it has risen still more in the non-married section of the population at these ages. The following statement, based on census populations, shows the changes in sex ratio since 1871.

Males per 1,000 females :—

	1871	1901	1911	1921	1931	1951
Total population, 15–44 .. ..	927	923	926	876	915	965
Non-married population, 15–44 ..	967	950	959	875	945	1,106

The abnormally low ratio in 1921, and sharp rise since that year are the striking features of this statement.. It will be noted that in 1951 among the non-married aged 15–44, males exceeded females for the first time even though the sex ratio is based on census populations which exclude the predominantly male armed forces stationed abroad.

The main factors influencing these changes in the sex ratio are generally understood. The proportion of males to females at birth has increased (1911–15, 1,038 per thousand ; 1931–35, 1,051 per thousand ; 1946–50, 1,061 per thousand) and improvements in infant and child mortality have raised the ratio of male to female survivors. In the early years of the century there was heavy emigration with a male preponderance, and the losses in the First World War fell particularly heavily on young males. On the other hand such male losses as there were in the Second World War were in part offset by the heavy post-war emigration of the wives of Allied Servicemen. Apart from migration and special factors associated with war, it seems likely that the factors producing the current high sex ratio will persist, and a further increase in the ratio may be expected.

The numerical superiority of males over females in non-married persons aged 15-44 is not spread evenly over all ages, but is particularly concentrated at the younger ages where marriage rates are highest, as the following statement shows :

Non-married males per 1,000 non-married females :—

	1911	1931	1951
Age 20-24 ..	1,016	1,097	1,376
„ 25-34 ..	968	960	1,349

Thus, for females, there is certainly no lack of partners to choose from at the younger ages and, in so far as this factor may influence marriage rates, there is every prospect of the maintenance of high proportions' married amongst the female population.

**Total Married Women of Reproductive Age.**—Illegitimacy being comparatively low in this country the fertility of the community is determined largely by the total number of married women of reproductive age in the population, that is by the survivors of earlier marriages who have not yet passed out of the child-bearing ages. New marriages will continually replenish this number. The annual addition of new marriages in relation to the total married

**Table XXXVIII.—Married Women per 1,000 total Female Population at each age and Ratio of proportion to that of 1938 taken as 100. 1911, 1931, 1938 and 1946 to 1951, England and Wales**

Year	Age							Aggregates	
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	20-39	15-49
	Married Women per 1,000 total Female Population.								
1911	12	242	558	711	752	755	729	552	502
1931	18	257	587	733	755	749	733	572	529
1938	23	328	643	733	771	768	736	623	566
1946	35	436	696	800	797	784	762	686	626
1947	33	445	714	802	807	785	763	697	635
1948	38	457	730	807	816	791	763	707	643
1949	41	467	736	823	822	795	768	716	651
1950	40	473	762	814	826	801	770	724	657
1951	42	475	772	830	835	813	780	734	666
	Ratio of proportion to that of 1938 taken as 100.								
1911	52	74	87	97	98	98	99	89	89
1931	78	78	91	100	98	98	100	92	94
1938	100	100	100	100	100	100	100	100	100
1946	152	133	108	109	103	102	104	110	111
1947	143	136	111	109	105	102	104	112	112
1948	165	139	114	110	106	103	104	113	114
1949	178	142	114	112	107	104	104	115	115
1950	174	144	119	111	107	104	105	116	116
1951	183	145	120	113	108	106	106	118	118



population represents only a small fraction of the order of 6 per cent, so that changes in the marriage rates will have a correspondingly reduced effect upon the total proportions of married women in the population. The proportions of married women are shown by quinary age-groups up to age 50 for selected years in Table XXXVIII.

Throughout the period covered by the table the proportions have increased at each age group and these increases have been outstanding at ages under 25. The proportion in 1951 exceeded that of 1938 by no less than 83 per cent at age 15–19 and 45 per cent at age 20–24, and the increase of 20 per cent at age 25–29 is less striking but hardly less significant, applying as it does to larger proportions married. At the younger ages the major part of the increase occurred between 1938 and 1946, and though an upward trend continues the pace is very much diminished.

The remarkable rise in the proportions at the younger ages and the much more modest increases at the older ages bring into relief two important changes—more women are marrying, and they are marrying at younger ages.

In any particular year the proportions increase with advancing age, at first very rapidly and then more slowly, to a maximum between ages 35 and 40. They then decline slowly as new marriages are increasingly offset by widowhoods but the total reduction in the proportion up to age 50 is relatively small.

The last two columns of Table XXXVIII show the proportion of married women in the reproductive ages 15–49 and in the more critical age group 20–39, at which 90 per cent of births occur. The proportions represent fractions of the reproductive years which on average fall within the married lives of women. From 1911 to 1931 the proportion in the age-group 15–49 rose slightly from 50·2 to 52·9 and it rose more rapidly between 1931 and 1938 to 56·6. By 1946 it had reached 62·6 and by 1951 66·6. In the age group 20–39, the proportion has risen from 55·2 in 1911 to 73·4 in 1951.

The contrast between the proportions in the periods compared is exaggerated by the ageing of the population in the 15–49 group since 1911, which tends to increase the relative number of women at the older ages within the group where the proportion married is greater. To remove this distortion, a marriage index for the year can be calculated by expressing the actual number of married as a ratio to the number which would have emerged as married, if the populations in the component quinary age-groups had been subject to standard proportions married in those age groups, viz. : those for 1911. The difference of this ratio from unity thus indicates changes in the proportions married, apart from that due to ageing.

Marriage indices standardized on 1911 proportions married within successive quinary age-groups from 15 to 50, with the corresponding unstandardized figures, are shown below :—

	1911	1931	1938	1946	1947	1948	1949	1950	1951
Standardized .. ..	1·000	1·022	1·067	1·146	1·154	1·168	1·180	1·188	1·203
Unstandardized ..	1·000	1·054	1·127	1·247	1·265	1·281	1·297	1·309	1·327

The correction for the ageing factor shows that the true increase in the proportion married among women aged 15–49 between 1911 and 1951 was 20·3 per cent instead of the 32·7 per cent suggested by the crude proportions, over

one-third of the latter increase being due to the ageing of the population and unrelated to the incidence of marriage itself. If comparison is confined to the narrower age-group 20–39 where clearly the effect of ageing is correspondingly restricted standardization only reduces the excess of 1951 over 1911 from 33·0 per cent to 28·0 per cent.

The fact that such a high proportion married has been attained is important. There is no sign of any recession in the proportion, and on the contrary it would not be necessary for the high rates of new marriages to be maintained at the level recently experienced to achieve further increases in the proportion of married women in the population aged 15–49. The marriage rates experienced before the war would not however suffice for this purpose.

### Seasonal Incidence of Marriage

Table D of Part II, 1951, shows the number of marriages registered in England and Wales and the rates per 1,000 population in each quarter in serial form for decennial periods from 1841 and for each year 1941 to 1951. In the same volume the monthly incidence for marriages is shown for each year 1947 to 1951 in Table N.

Throughout the nineteenth century the highest marriage rates occurred consistently in the December quarter and the lowest in the March quarter. Between the two World Wars a new pattern emerged and almost without exception the two summer quarters became the highest and the two winter quarters the lowest. The March quarter has generally been that of lowest marriage incidence, but the incidence rises and relatively is disturbed when Easter happens to fall within that quarter.

Taking the average number of marriages in a quarter of any one year as 100, the following statement compares the quarterly incidence in years when Easter fell in the March with those when Easter fell in the June quarter.

Years	Easter in March Quarter					Years	Easter in June Quarter				
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year		1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
1932	81	90	124	105	400	1938	58	113	129	100	400
1937	79	89	135	97	400	1946	81	105	114	100	400
1940	93	99	112	96	400	1947	75	109	119	97	400
1948	96	94	124	86	400	1949	87	102	122	89	400
1951	122	74	123	81	400	1950	97	90	128	85	400

Since the Second World War, in addition to the temporary shift from the June to March quarters in the years when Easter fell in the March quarter, there has also been a transference of marriages from the June to March quarters of a more permanent and progressive character. The fortuitous disturbance of two March Easters in this short period obscures this trend and an approximate removal of this disturbance is desirable to clarify the picture.

Disregarding war years, the previous two March Easters occurred in 1932 and 1937. The incidence of marriages in the March and June quarters in these



years and in those immediately preceding and succeeding them, related to a quarterly average of 100 as in the above statement, was as follows :—

Year	March Qtr.	June Qtr.	Year	March Qtr.	June Qtr.
1931	60	109	1936	56	114
1932	81	90	1937	79	89
1933	56	108	1938	58	113

According to those data, a March Easter leads to a transfer of an average of 22 from the June to the March quarter index. This adjustment has been made to the figures for 1948 and 1951 (when Easter fell in the March quarter), to provide the following set of figures from 1946 to 1951, comparable in the sense that they have been freed from Easter disturbance.

Year	1946	1947	1948	1949	1950	1951
March Quarter ..	81	75	74	87	97	100
June Quarter ..	105	109	116	102	90	96

The possible weakness of the assumption on which the 1948 and 1951 figures have been adjusted, namely that the effect of a March Easter in these years was the same as in 1932 and 1937, renders it dangerous to try to draw too precise conclusions. Nevertheless it is evident that a persistent change has been taking place since 1947 or 1948. The monthly incidence of marriages, available for the years from 1947, throws some further light on this. Account must however be taken of the varying lengths of months by calculating daily averages, and Table XXXIX shows the daily average of marriages registered in England and Wales

Table XXXIX.—Comparison of Marriage Incidence by calendar months, 1947 to 1951, England and Wales

		Daily Average number of Marriages in each month					Ratio of Daily Average for the month to daily average for the year taken as 1,000				
		1947	1948	1949	1950	1951	1947	1948	1949	1950	1951
January ..		641	741	696	497	464	583	684	677	506	470
February ..		798	711	796	773	639	726	656	774	787	647
March ..		1,065	1,673*	1,223	1,608	2,493*	969	1,543*	1,190	1,637	2,523*
April ..		1,387	858	1,308	1,047	475	1,262	792	1,272	1,066	481
May ..		890	857	527	591	567	810	791	513	602	574
June ..		1,332	1,351	1,332	1,033	1,152	1,212	1,246	1,296	1,052	1,166
July ..		1,174	1,492	1,364	1,204	1,065	1,068	1,376	1,327	1,226	1,078
August ..		1,396	1,140	1,064	1,134	1,139	1,270	1,052	1,035	1,155	1,153
September ..		1,325	1,386	1,304	1,412	1,432	1,206	1,279	1,268	1,438	1,449
October ..		912	911	864	700	681	830	840	840	713	689
November ..		913	671	598	563	525	831	619	582	573	531
December ..		1,346	1,196	1,244	1,208	1,177	1,225	1,103	1,210	1,230	1,191
Year ..		1,099	1,084	1,028	982	988	1,000	1,000	1,000	1,000	1,000

\* Easter fell in March in 1948 and 1951.

in each month and the ratio of the daily average for the month to the daily average for the year from 1947 to 1951.

By comparing 1947 and 1950 for instance, two years in which Easter fell in April, or 1948 and 1951 when Easter fell in March, it may be seen from this table that all the increase in the March quarter is concentrated in the month of March, while the complementary decrease in the June quarter is spread from April to June. This lends credence to the popular explanation of the shift, which has received comment in the national press in the last few years, namely that it is attributable to the system by which the Inland Revenue calculate a wife's allowance in income tax assessment. This system favours marriage before, rather than after, the beginning of the financial year very early in April. This advantage apparently attracts many of those who would otherwise have married early in the financial year and up to as late as June.

Apart from this feature the influence of Easter and Christmas is also clearly discernible in March (or April) and December. In 1950 and 1951, however, the holiday month of September recorded a higher relative incidence than either April or December. The relative incidence is naturally high in the other holiday months, June to August.

### **Marriage Incidence in different parts of the Country**

The number of marriages and the marriage rates in regions, counties and county boroughs for each year are published in Table F of the successive issues of Part II. Up to 1949 classification was by Geographical Regions and from 1950 by Standard Regions, but Appendix F to Part II for 1946 to 1949 provides an additional tabulation by Standard Regions.

It has frequently been stressed in previous Reviews that the significance of differences in local marriage rates is reduced by the fact that the district in which the marriage is registered is often the district of residence of only one of the parties and sometimes of neither, though this weakness would be less in comparisons between large sections of the country than between small local areas. Another difficulty arises from the fact that marriage rates for local areas were calculated upon civilian populations up to 1949, and upon home populations (that is including the armed forces stationed in the area) from 1950, though in these and other years the parties to the marriage would include members of the armed forces, whether stationed at home or abroad. To minimize distortion from this source, ratios of local rates to the national rate for each year may be considered, as shown in Table XL.

The attraction of London for marriage has always been reflected in the statistics. In the years immediately preceding the war about  $12\frac{1}{2}$  per cent of the total marriages of the country were registered in London, giving it a marriage rate about 25 per cent higher than that of the country as a whole. Since the war, when many people were evacuated from London, the population has remained much below the pre-war level, so that although only  $9\frac{1}{2}$  per cent of all marriages are registered in London, the marriage rate is still about 25 per cent above the national level.

Table XL shows the ratio of marriage rates in Standard Regions to the national rate in the years from 1946 to 1951.

The unique position of London dependent, as it is, in part upon the attraction of a London wedding for those resident elsewhere is an outstanding feature of



Table XL.—Ratio of Marriage Rates in Standard Regions of England and Wales to that of the whole country ; 1946 to 1951

Region	Ratio of Regional to National Rate taken as 1,000						Ranking of Ratio					
	1946	1947	1948	1949	1950	1951	1946	1947	1948	1949	1950	1951
England and Wales ..	1,000	1,000	1,000	1,000	1,000	1,000						
Regional Summary ..												
Northern .. ..	1,054	1,016	1,018	1,033	1,032	1,031	1	3	3	2	2	2
East and West Ridings ..	1,047	1,029	1,026	1,037	1,024	1,030	2	2	2	1	3	3
North Western .. ..	1,023	1,015	1,006	1,017	1,009	1,002	5	4	7	6	6	5
North Midland .. ..	1,004	1,005	1,013	1,016	1,019	997	6	5	4	7	5	7
Midland .. ..	978	967	1,010	1,021	1,021	1,027	7	7	6	4	4	4
Eastern .. ..	868	872	874	859	866	851	11	11	11	11	11	11
London and South Eastern	1,024	1,057	1,040	1,028	1,041	1,054	4	1	1	3	1	1
County of London ..	1,231	1,280	1,247	1,225	1,237	1,253						
Southern .. ..	965	952	961	950	932	942	8	8	8	8	8	8
South Western .. ..	928	935	931	922	926	917	9	10	9	9	10	9
Wales I .. ..	1,025	989	1,012	1,018	999	998	3	6	5	5	7	6
Wales II .. ..	927	945	906	913	930	915	10	9	10	10	9	10

the table. The rate in the Eastern region, some 12 to 15 per cent below the national average, is also notable. Other rural regions—South Western and Wales—also show low rates, nearly 10 per cent below the average. There are no other important differences, but it may be seen from the ranking orders on the right-hand side of the table that the regions do tend to maintain their relative positions from year to year.

Buildings in which Marriages may be Solemnized

At the end of the year 1951 the numbers of churches or chapels of the Established Church and of the Church in Wales and of registered buildings of other religious denominations in which marriages could legally be solemnized were as follows :—

	Number at the end of 1951	Increase or decrease (—) in 1951	Increase per cent since 1921
Established Church and Church in Wales .. ..	16,825	—2	4.1
All other religious denominations ..	23,526	105	29.9
Total .. ..	40,351	103	17.8

By the Places of Religious Worship Certifying Act, 1852, provision was made for places of religious worship of Protestants, other than churches or chapels of the Established Church, to be certified as such to the Registrar General instead of to the Diocesan authorities or the local Justices as required by earlier Acts. This Act was replaced in 1855 by the Places of Worship Registration Act, which extended the privilege to other religious bodies. Such certification is a necessary preliminary to the registration of a building for the solemnization of marriages.

The Marriage Act, 1836, enacted that any separate building which had been certified as a place of religious worship could, if registered by the Registrar

General, be used for the solemnization of marriages in the presence of a registrar. The provision is now contained in the Marriage Act, 1949.

The numbers of places of meeting for religious worship on the official register on the 31st December, 1951, and the numbers of buildings registered for the solemnization of marriages are shown in Table XLI.

The Marriage Act, 1898, provided that, under certain conditions, marriages might be solemnized in a registered building, without the presence of a registrar but in the presence of a person duly authorized for the purpose by the governing body of the building and certified as such to the Registrar General. The governing bodies of some of the registered buildings have made use of this provision, which was re-enacted in the Marriage Act, 1949. At the end of the year 1951 the respective numbers of buildings where a duly authorized person was able to act were as follows :—

Methodist Church	..	..	..	..	5,359
Congregationalists	..	..	..	..	1,242
Baptists	..	..	..	..	962
Calvinistic Methodists	..	..	..	..	195
Other Denominations and Unsectarians	..			..	791
<b>All Denominations</b>	..	..	..	..	<b>8,549</b>

**Table XLI.—Buildings\* certified as places for Worship and registered for Marriages, 1951, England and Wales**

Denomination	Buildings certified to the Registrar General as meeting places for religious worship	Buildings registered for the solemnization of marriages	Increase or decrease (—) per cent since 1921 in the number of buildings certified for religious worship
Roman Catholics .. .. .	2,418	2,216	55.0
Methodist Church .. .. .	13,251	9,256	—5.1
Congregationalists .. .. .	3,623	3,375	7.7
Baptists .. .. .	3,601	3,290	13.0
Calvinistic Methodists .. .. .	1,419	1,219	9.2
Presbyterians .. .. .	463	452	3.3
Unitarians .. .. .	195	200	6.0
New Church .. .. .	61	64	11.0
Catholic Apostolic Church .. .. .	53	44	—24.3
Countess of Huntingdon's Connexion .. .. .	43	39	—8.5
Salvation Army .. .. .	1,573	584	38.5
Society of Friends .. .. .	421	†	—2.3
Jews .. .. .	427	†	64.9
Other Denominations .. .. .	7,623	2,787	128.6
<b>All Denominations</b> .. .. .	<b>35,171</b>	<b>23,526</b>	<b>19.9</b>

\* Of these buildings nearly 1,000 were certified before 1852, as Places of Meeting for Religious Worship to some other authority than the Registrar General and therefore are not included in the number so certified to the Registrar General shown above.

† It is not necessary for buildings to be registered for the solemnization of Quaker or Jewish marriages. Under section 31 of the Births, Deaths and Marriages Registration Act (1836), Registering Officers of the Society of Friends, and Secretaries of Jewish Synagogues who have been certified to the Registrar General record the marriages in each case.



The increase of 110 which took place in 1951 in the numbers of buildings certified as meeting places for religious worship under the heading “ other denominations ” in Table XLI is made up as follows :—

Apostolic Church	..	..	..	..	..	..	..	3
Assemblies of God	..	..	..	..	..	..	..	13
Brethren	..	..	..	..	..	..	..	9
Calvary Holiness Mission	..	..	..	..	..	..	..	1
Christadelphians	..	..	..	..	..	..	..	5
Christians	..	..	..	..	..	..	..	2
Christians—not otherwise designated				..	..	..	..	15
Christian Scientists	..	..	..	..	..	..	..	6
Christian Spiritualists	..	..	..	..	..	..	..	9
Elim Foursquare Gospel Alliance	..	..	..	..	..	..	..	6
Fellowship of Independent Evangelical Churches	..	..	..	..	..	..	..	3
Jehovah's Witnesses	..	..	..	..	..	..	..	11
Latter Day Saints	..	..	..	..	..	..	..	3
Pentecostal Mission	..	..	..	..	..	..	..	1
Seventh Day Adventists	..	..	..	..	..	..	..	4
Others—not specified	..	..	..	..	..	..	..	19
Total ..								110

## WIDOWHOOD AND WIDOWERHOOD

Detailed commentary on widowhood and widowerhood was included in the 1940–45 Civil Text, pages 47–52, to which reference should be made for an introductory discussion on the peculiarities of these statistics with special reference to the alternative classes of “not stated” cases which may arise, and such sources of information as there are on these cases. In that commentary the concept of widowhood rates (defined as “The number of widows in a given age group, produced by the death of a husband in the current year, expressed as a proportion of all wives of that age”) was introduced, and it is retained in the present commentary. A similar concept applies to widowerhood. Further commentary was contained in the 1946–50 Civil Text on pages 51 to 53.

In Table XX of Part II the number of marriages terminated by the death of a partner are given by joint ages of the deceased and the surviving partner. Only cases in which marital condition was stated are included in the table, but the proportion of “not stated” to “stated” marital condition is given for each age of deceased. It has been a feature of these statistics, since they were first collected in 1938, that this “not stated” proportion has been very low for female deaths, a small fraction of 1 per cent, but has been substantial for male deaths, particularly for ages under 30. Table XLII shows the “not stated” proportions for males for the years 1938 and 1945 to 1951.

**Table XLII.—Percentage “Not Stated” to “Stated” marital condition  
—Deceased Men, 1938 and 1945 to 1951, England and Wales**

Age of Deceased	1938	1945	1946	1947	1948	1949	1950	1951
All ages ..	8.2	5.4	5.5	5.5	5.4	5.0	4.9	4.9
15– ..	22.7	13.8	15.3	13.8	10.8	12.8	19.6	14.8
20– ..	40.4	15.0	20.7	28.8	27.7	28.9	40.4	47.2
25– ..	31.5	14.1	21.2	24.6	22.8	24.8	28.6	35.1
30– ..	28.6	16.0	20.5	20.3	20.0	19.7	19.7	21.7
35– ..	22.2	14.7	16.2	16.3	16.4	16.2	14.8	16.3
40– ..	17.4	12.2	13.7	14.7	13.1	12.6	12.4	12.0
45– ..	16.5	10.1	9.9	11.0	9.7	9.8	9.5	9.3
50– ..	12.6	8.3	8.2	8.2	8.5	7.3	6.8	7.0
55– ..	10.3	7.1	6.6	6.7	6.8	5.9	5.7	5.3
60– ..	8.3	5.8	6.0	5.9	5.6	5.0	4.8	4.9
65– ..	6.2	5.0	4.6	4.9	4.6	4.0	3.9	4.0
70– ..	5.2	4.5	4.4	4.3	3.9	3.5	3.4	3.5
75 and over	4.3	4.1	4.0	3.8	3.5	3.4	3.4	3.2

From 1938 to 1945 there was a more or less general and steady decrease in the percentage “not stated.” It may be seen from Table XLII that since 1945 there has been a tendency for the percentage to continue decreasing at ages over 45, but to increase at ages under 30, and in 1951 at ages 20–24 and 25–29 the percentage exceeded that originally recorded in 1938. Failure to indicate marital condition is more likely for bachelors than for married men whose widows are commonly the informants. If this is so proportional allocation of the “not stated” cases will lead to some bias, and to this extent the rates for males given later must be accepted with some caution at the younger ages.



**Table XLIII.—Widowerhoods per 1,000 Married Men and Widowhoods per 1,000 Married Women, in each age group, 1939, 1946–49, 1950 and 1951, England and Wales**

Age of Surviving Spouse	1939	1946–49	1950	1951	1939	1946–49	1950	1951
	Widowerhoods per 1,000 Married Men.				Widowhoods per 1,000 Married Women.*			
All Ages ..	8.7	7.5	7.5	7.8	14.3	13.4	13.8	14.8
Under 25	2.1	1.5	1.0	.8	1.8	1.2	1.0	1.0
25– ..	2.3	1.5	1.1	.9	2.0	1.7	1.4	1.3
30– ..	2.3	1.6	1.3	1.1	2.8	2.2	1.9	1.9
35– ..	2.8	2.0	1.6	1.5	4.4	3.3	3.0	3.0
40– ..	3.6	2.5	2.2	2.2	6.6	5.3	4.9	5.0
45– ..	4.9	3.9	3.6	3.4	10.3	9.1	8.7	8.8
50– ..	7.4	5.8	5.4	5.4	16.0	14.3	14.2	15.4
55– ..	10.5	8.7	8.4	8.6	22.9	21.1	21.6	23.3
60– ..	16.5	13.8	13.2	13.8	35.0	32.9	33.6	38.1
65– ..	24.8	21.0	21.1	22.0	49.6	46.6	49.1	54.9
70– ..	37.3	32.6	34.2	36.4	72.1	69.3	71.7	72.0
75 and over	73.3	57.9	61.0	65.9	126.4	92.5	106.5	119.2

\* Non-civilian casualties were not classified by marital condition before 1950. An approximate allowance has been made for them by rateable allocation in earlier years.

Table XLIV shows widowhood and widowerhood rates by age for selected periods from 1939 to 1951. These rates are different in character from published death rates because they derive solely from the deaths of married persons and the latter represent selected lives in that they exclude persons whose health denies them the opportunity of marriage. Nevertheless these rates reflect in general the sex and age distribution and annual changes of mortality rates and much of the commentary on mortality rates contained in the medical part of this Review is relevant to them.

For demographic purposes, however, it is not the nature of small differentials within the main structure of widowhood and widowerhood rates that is important, but the general level of these rates. It is clear that the current level of mortality at ages under 45, is so low that the termination of marriages by the death of one or other of the partners is not significantly depleting the younger married population or, in particular, the population of married women in the reproductive ages.

# DIVORCES AND REMARRIAGE OF DIVORCED PERSONS

## Divorce

Divorce statistics were shown in Tables O and P in Part II up to 1949, and more detailed statistics have been shown in Tables O and P1 to P4 since 1950. A detailed analysis of and commentary on divorce statistics was included in the 1946-50 Civil Text on pages 54-67.

The immediate interest in divorce statistics is in the numbers currently occurring and in the pace and direction of their trend. For such a study it is better to examine the annual incidence of petitions filed, rather than of decrees absolute granted, since apart from the fact that the latter are liable to disturbance from purely administrative changes in procedure, changes in the numbers of couples seeking divorce precede in time the actual effects upon divorce incidence.

During the period 1938-1950 the annual incidence of petitions for divorce underwent violent fluctuations, mainly due to the stresses of the 1939-45 war. By 1950 it seemed that these effects were exhausted and that, in the absence of further disturbing factors, 1951 would see the completion of post-war readjustment and a resumption of the more normal long-term trend. However, a

**Table XLIV.—Petitioning for Divorce and Decrees Absolute granted, 1918 to 1930 and 1945 to 1951, England and Wales**

Year	Divorce Petitions filed (dis- solution and nullity)	Decrees Absolute granted (dissolu- tion and nullity)	Year	Divorce Petitions filed (dis- solution and nullity)	Decrees Absolute granted (dissolu- tion and nullity)
(End of First World War)			(End of Second World War)		
1918	2,362	1,111	1945	25,711	15,634
1919	5,184	1,654	1946	43,163	29,829
1920	4,565	3,090	1947	48,501	60,254
1921	2,907	3,522	1948	37,919	43,698
1922	2,468	2,588	1949	35,191	34,856
1923	2,833	2,667	1950	29,729	30,870
1924	2,978	2,286			
1925	3,054	2,605	(Legal Aid and Advice Act, 1949)†		
(Poor Persons Rules, 1925)*			1951	38,382	28,767
1926	3,631	2,622			
1927	4,294	3,190			
1928	4,050	4,018			
1929	3,997	3,396			
1930	4,288	3,563			

\* Came into operation on 6th April, 1926.

† Came into operation on 2nd October, 1950.

disturbing factor was introduced on 2nd October, 1950, by the Legal Aid and Advice Act, 1949, which extended the facilities for divorce of persons of limited



means. The incidence of divorce in 1951 and the preceding period may therefore be compared on the one hand with the experience in the years following the First World War, and on the other hand with that in the years around 1926 when the Poor Persons Rules 1925 came into operation—Rules which produced a sharp rise in divorce petitions in a manner similar to that which has arisen from the operation of the Legal Aid and Advice Act, 1949. In Table XLIV is shown the number of petitions filed and decrees absolute granted in each year from 1918 to 1930 and from 1945 to 1951.

After the First World War, the incidence of divorce petitioning rose steeply to a peak in 1919 and then steeply declined to a trough three years later, in 1922. The numbers then increased more or less steadily each year, but on a gentler slope, until the introduction of the Poor Persons Rules 1925 intervened. After the Second World War the numbers of petitions occurring each year was about ten times as great as after the First War, but, so far as has yet been revealed, the pattern followed has been somewhat similar. After a steep rise a peak was reached of over 48,000 petitions in 1947, and a steep decline had brought the figure down to 30,000 by 1950. It does not seem unreasonable to assume that, in the absence of the Legal Aid and Advice Act, 1949, or any other disturbing factor, a figure slightly in excess of 30,000 might have been recorded in 1951.

Whereas the Legal Aid and Advice Act, 1949, positively increased the facilities for divorce available to persons of limited means, the Poor Persons Rules, 1925, merely altered the procedure by which the then existing facilities were made available. Nevertheless it is thought that their influence may have been similar in some respects since, as a result of publicity, they enhanced existing facilities by making those requiring help aware of its availability. An examination of the petitions filed in the years from 1925 to 1930 in Table XLIV will show that the introduction of the Rules led to a steeper rise in the annual incidence of divorce petitioning than that shown from 1922 to 1925, though this was far less steep than that immediately following the war. After a minor peak, a trough was reached in 1929, and a gently rising trend was again resumed. A close similarity to this experience must not necessarily be expected in the years following 1951, for one thing the two procedures were introduced in widely different months—April and October, but at least a sharp rise and a subsidence, followed by the resumption of the normal gradually rising trend may be expected in the absence of further disturbing factors.

The difficulty, to which attention was drawn above, in following the pressure of divorce from the incidence of decrees absolute may be seen from Table XLIV. The peak in divorce petitioning after the First World War was reached in 1919, the peak in the granting of decrees absolute was not reached until two years later. Following the introduction of the Poor Persons Rules, 1925, a peak in petitioning was reached in 1927, but not until the next year was the peak reached in the granting of decrees absolute. Since the Second World War a number of changes have been made in the procedure for obtaining a decree absolute and their influence may be seen from the violent fluctuations in the incidence of decrees absolute in the period 1945 to 1951. A more detailed discussion of these events was included in the 1946–50 Civil Text on pages 59 and 60.

A detailed analysis and commentary on divorce rates by current ages of husband and wife in combination, by current age of wife and duration of marriage, by age of wife at marriage and duration of marriage and by current age of wife and size of family was included in the 1946–50 Civil Text on pages 62 to 67.

## Remarriage of Divorced Persons

One aspect of divorce which is of concern is its threat to reduce the number of married persons in the population and consequently the incidence of legitimate births. In this connection, however, it is necessary to examine together the incidence of divorce and of remarriage of divorced persons since only the excess of the former over the latter actually reduces the married population.

The general trend of the numbers of married persons who were divorced and of divorced persons who remarried is shown in Table XLV.

**Table XLV.—Annual Number of Persons Divorced and of Divorced Persons who Re-married, 1926 to 1951, England and Wales.**

Period	Number of persons divorced in the period	Number of divorced persons who re-married in the period							
		Persons	Men	Women	Divorced men marrying spinsters	Divorced men marrying widows	Divorced men and women inter-marrying	Divorced women marrying bachelors	Divorced women marrying widowers
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1926-30	6,716	3,917	2,128	1,789	1,662	270	392	1,225	368
1931-35	8,022	5,154	2,777	2,377	2,179	302	592	1,597	484
1936-40	12,361	8,558	4,580	3,978	3,641	464	949	2,746	758
1941-45	20,778	12,548	7,093	5,455	5,453	874	1,532	3,587	1,102
1946-50	79,803	48,898	26,273	22,625	17,767	3,303	10,406	14,271	3,151
1936	8,114	6,468	3,507	2,961	2,788	354	730	2,009	587
1937	9,772	6,988	3,759	3,229	2,964	374	842	2,192	616
1938	12,500	8,179	4,404	3,775	3,467	471	932	2,576	733
1939	15,910	10,698	5,715	4,983	4,558	550	1,214	3,480	896
1940	15,510	10,458	5,514	4,944	4,430	571	1,026	3,474	957
1941	12,736	9,378	5,091	4,287	4,028	575	976	2,900	899
1942	15,236	9,706	5,437	4,269	4,214	664	1,118	2,815	895
1943	20,024	11,049	6,157	4,892	4,712	797	1,296	3,237	1,007
1944	24,624	13,728	7,914	5,814	6,009	981	1,848	3,693	1,197
1945	31,268	18,879	10,867	8,012	8,303	1,355	2,418	5,292	1,511
1946	59,658	29,636	16,479	13,157	11,781	2,287	4,822	8,596	2,150
1947	120,508	56,945	30,751	26,194	21,272	3,980	10,998	17,277	3,418
1948	87,396	58,728	31,201	27,527	21,072	3,812	12,634	17,541	3,669
1949	69,712	51,494	27,645	23,849	18,150	3,400	12,190	14,435	3,319
1950	61,740	47,687	25,290	22,397	16,558	3,038	11,388	13,503	3,200
1951	57,534	44,171	23,110	21,061	14,809	2,880	10,842	12,524	3,116

Expressed as percentages of the number of persons divorced in the same period the averages for the five quinquennial periods 1926-30 to 1946-50 and the single years 1947 to 1951 of remarriages of divorced persons (columns (2) and (3) of Table XLV) were :—

Period	1926-30	1931-35	1936-40	1941-45	1946-50
Percentage of divorced who remarried .. .. .	58.3	64.2	69.2	60.4	61.3

Period ..	1947	1948	1949	1950	1951
Percentage of divorced who remarried .. .. .	47.3	67.2	73.9	77.2	76.8

Divorced persons who remarry during any period are not confined to those granted a decree absolute during the same period, so that the above figures do



not precisely represent the proportion of divorced persons who ultimately remarry. Most of these figures will understate the true proportion, though perhaps not by a substantial amount when the rate of increase of divorces was slow. Some of the figures for single years after the abrupt peak in divorce incidence in 1947 may, however, overstate the position. The decline in the proportion from 1950 to 1951 suggests that this distortion is now on the wane and more stable figures—continuing the trend shown from 1926 to 1940—may soon be recorded. The figures suggest that the proportion of divorced persons who ultimately remarry is rising, and is perhaps in the region of two-thirds to three-quarters, so that the net loss to the married population is only a small fraction of the total number divorced.

Throughout the period covered by Table XLV the number of divorced men who remarried exceeded that of divorced women, the latter being about 84 per 100 men. The percentage ratios of divorced women to divorced men remarrying rose slightly between 1926–30 and 1936–40 from 84·1 to 86·9, fell to 76·9 in 1941–45 and rose to 86·1 in 1946–50 and 91·1 in 1951.

The divergence from the general trend in 1941–45 is shown in detail in the following statement :—

Divorced women remarrying per 100 divorced men remarrying :—  
(Columns (4) and (5) of Table XLV)

1938 85·7	1939 87·2	1940 89·7	1941 84·2	1942 78·5	1943 79·5	1944 73·5
1945 73·7	1946 79·8	1947 85·2	1948 88·2	1949 86·3	1950 88·6	1951 91·1

The sharp rise in 1939 and 1940 might be attributable to the operation of the Matrimonial Causes Act, 1937. After 1940 the ratios fell to a trough in 1944 and 1945 and then recovered each year so that the average for the period 1941 to 1951 as a whole was 85·0 per cent, indicating that the higher proportion of divorced women remarrying in the years 1948 to 1951 almost compensated for the lower values in the period 1941 to 1946. It may be also that the high percentages recorded since 1947 indicate that changed population conditions are leading to a fundamental increase in the ratio. The change in the sex ratio amongst the non-married population, referred to on page 13, might be a contributory factor.

A more detailed analysis and discussion of the remarriage of divorced persons was included in the 1946–50 Civil Text on pages 67 to 73.

# GENERAL MORTALITY

## Number of Deaths

In 1951 a total of 549,380 deaths were registered in England and Wales, 281,724 being of males and 267,656 being of females. As in 1950 deaths of non-civilians are included in these figures, their separate identification in the tables having been discontinued. The number of deaths in 1951 was 8 per cent higher than in the previous year, the increase being almost entirely accounted for by a severe influenza epidemic in the March quarter.

### Mortality Rates and Ratios—Definitions

The crude death rates, and the rates and ratios standardized for age which have been developed and are variously used for comparative purposes, have been fully discussed in previous reports. Brief definitions of the main functions used in discussing differentials over time or between different sex-age-sections of the population of the country as a whole, and differentials between local areas, are given below.

**Crude death rates** represent the total number of deaths from all causes registered during the year per thousand or per million of the home\* population at the middle of the year. In calculating these rates for local areas the deaths are corrected for transfers to the place of residence of the deceased. Use of the mid-year populations as denominators involves the assumption, tenable at the present time, that the population resident in a local area was either stationary or changing at a uniform rate throughout the year. The annual crude death rates are given in Table 3 (Part I) for England and Wales for all persons and each sex separately from 1841 to 1951 (except for years affected by the two world wars, for which civilian death rates were calculated instead), and in Table 12 (Part I) for local authority areas, without distinction of sex for 1951.

**Civilian death rates** for all persons and each sex separately represent the total numbers of deaths of civilians from all causes per thousand or per million of the corresponding estimated civilian population at risk. They were used for many tabulations instead of crude death rates relating to the total home population in the periods 1915–20 and 1939–49, but are no longer calculated.

**Death rates from particular causes** represent the number of deaths from each cause registered during the year per thousand or per million of the resident or home population at the middle of the year. The main tabulation of death rates from particular causes is given in Table 8 (Part I) for all persons and each sex separately.

**Death rates in sex and age-groups** represent the number of deaths registered of persons in each sex-age-group per thousand or per million of the estimated number of persons in that sex-age-group alive at the middle of the year. Exceptions to the use of estimated populations as denominators are the various rates of infant mortality, which are based on the appropriate numbers of live births, and certain death rates connected with child-bearing which are based on the appropriate numbers of live and stillbirths. Death rates from

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\* The estimates of home population given in Tables 1, 2 and 12 of Part I comprise the civilian population together with members of British, Commonwealth and foreign armed forces stationed in the country, but excluding those stationed abroad.



all causes in sex and age-groups are given in Table 4 (Part I) for England and Wales from 1841–1951. Deaths from all causes and from separate causes are given in sex and age-groups in Tables 17–19 (Part I) for 1951 for England and Wales, Standard Regions, and national density aggregates, and can be used with the corresponding mid-year populations given in Tables 1 and 2 to derive sex-age-rates for particular causes for these areas.

**Comparative Mortality Index (C.M.I.).**—This index has replaced the standardized death rate which was used formerly for the purpose of measuring the trend of mortality from all causes (or from a particular cause) over a period of time. The methods of calculation and a discussion of its advantages over the standardized death rate may be found on pages 6–11 of the Medical Text volume for 1940–45. Whereas the rate previously used had been standardized by a “direct” method of referring current age-rates to a standard population age-structure, the C.M.I. referred it to a hypothetical age-structure depending partly on a standard age-structure and partly on the current age-structure. It represents the ratio between adjusted death rates of the year in question and of a base year (at present the year 1938), each calculated by weighting the death rates for the various sex-age groups by the mean of the corresponding proportions of the population living in the two years. If the death rate experienced by an age group in the year to which the index relates is denoted by  $m$ , and the corresponding rate in 1938 by  $m'$ , and if  $r$  and  $r'$  are the fractions of the populations of all ages falling within that age group then

$$\text{C.M.I.} = \sum m (r + r') / \sum m' (r + r')$$

where  $\sum$  denotes summation over all the age groups. The C.M.I.'s for all causes of death are shown in Table 3 (Part I) for all persons and each sex separately from 1841 to 1951. For separate causes of death C.M.I.'s are given in Table 9 for each sex in each of the last eleven years. The corresponding table in the 1943 Review takes this record back to 1933. For certain important causes Table 6 gives the indices for years or periods of years extending as far back as the records allow. In all these tables, the Index for the year 1938 is taken as unity.

**The adjusted ratios of male to female mortality** shown in Table 3 (Part I) give a measure applicable to a particular year derived by the same formula as the C.M.I.'s, but interpreting  $m'$  and  $r'$  as referring to females and  $m$  and  $r$  as referring to males, each in the year to which the ratio applies.

**The mortality ratios** for each year or period of years, shown for each sex and for both sexes in Table 4 (Part I), are the ratios between the C.M.I. of the period specified and that of the period immediately preceding it. The cumulative product of the mortality ratios proceeding forwards from 1938 thus produces the successive C.M.I.'s of the years 1939 to 1950; and the cumulative product of the reciprocals of the mortality ratios proceeding backwards from 1938 likewise produces the successive C.M.I.'s for years prior to 1938. The mortality ratios are not to be confused with the standardized mortality ratios (S.M.R.), for definition of which see below.

**The equivalent average death rate** is the arithmetic mean of the rates for quinary age-groups up to some convenient limit such as 65, this being equivalent to calculating a standardized death rate at ages under 65 based upon a population uniformly distributed over the 13 age groups. This type of rate provides an adequate standardization by age for many purposes of comparison between areas or between causes and is very easily calculated from the various tables of deaths by age given in the Review.



**Standardized Mortality Ratio (S.M.R.).**—This index enables comparisons to be made between the mortality rates of different sections of the population in a given period. It is constructed by an “indirect” method of standardization (i.e. by the application of standard age death rates to populations with varying age-structures). S.M.R.’s have been used in particular in studies made by the General Register Office of mortality among persons in different occupations, and the following definition of the S.M.R. as so used in respect of adult males, taken from the Registrar General’s Decennial Supplement, 1951, Occupational Mortality, Part I,\* sufficiently explains the concept: “The number of deaths occurring among men aged 20–64 in a given occupation, expressed as a percentage of the number of deaths which might have been expected to occur if the given occupation had experienced within each age-group the same death rate as that of a standard population consisting either of all males or of all occupied and retired males only.”

**Comparative Mortality Figure (C.M.F.).**—This is another index which has been used in occupational mortality studies made by the General Register Office. In contrast to the S.M.R., the C.M.F. is constructed by a “direct” method of standardization (i.e. by the application of variable age-death rates to a population with a standard age-structure). C.M.F.’s relating to the mortality of males in different occupations are also described in the Decennial Supplement referred to above, being defined in the following terms: “The number of deaths that would occur in a given occupation if the population engaged in that occupation were the same in numbers and age-distribution as a standard population in which occurred 1,000 deaths. The standard population would either consist of all males aged 20–64 or only of all occupied and retired males at those ages.”

**Life-table functions of mortality** provide other types of measure of mortality from all causes which are not influenced by the age-distribution of the population in the year of measurement. Two of the most important functions are shown in Tables XLVIII and XLIX of this report, viz.:

*survivors to age  $x$  ( $l_x$ )* i.e. the numbers who would survive to exact age  $x$  out of 10,000 born who were subject throughout their lives to the death probabilities indicated by the death records of a given period.

*expectation of life ( $e_x^o$ )* i.e. the average future lifetime which would be lived by persons aged exactly  $x$ , if subject to the death probabilities indicated by the death records of a given period.

**Area Comparability Factors (A.C.F.)** are given in Table 12 (Part I) for local authority areas to enable allowance to be made for differences in the sex and age composition of local populations when comparing mortality rates of different areas in the same year. In deriving the A.C.F. of a local area a hypothetical local death rate is first calculated, for a base period for which appropriate information is available about the sex-age structure of local populations, by applying national death rates of this period by sex and age to the local populations in the corresponding sex-age groups. The A.C.F. is the ratio of the mean crude death rate of England and Wales for this base period (which may be of 2 or 3 years duration) to the corresponding hypothetical local rate. A.C.F.’s were first published in the 1934 Statistical Review (Part II, Table E) based on local age-structures as given in the 1931 census and national death rates based on deaths of the three years 1930–32. These factors were used until 1939, except for adjustments made to take account of boundary changes, and were appropriate for use in respect of earlier years around 1931 for those areas whose boundaries were the same as in 1934. The series was

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\* H.M.S.O., price 7s. 6d., by post, 7s. 9d.



discontinued during the war and immediate post-war years, being resumed in 1949 with a new set of factors based on the December 1947 counts of local civilian populations by sex and age, and deaths of 1947 and 1948, adjusted where significant to include estimated allowances for Armed Forces stationed in the areas, as well as for boundary changes. These factors will in turn be replaced by A.C.F.'s based on 1951 census data as soon as the relevant information is available. For a few areas with rapidly expanding populations, whose age-structures may be changing in a manner different from that of the national population, A.C.F.'s of this kind, based for a number of successive years on the conditions of a fixed base date, may increasingly fail to reflect their peculiar sex-age features, as the interval from the base date becomes longer.

**Local adjusted death rates** are obtained by multiplying the local crude death rate by the corresponding A.C.F. This provides a valid basis of comparison between areas of mortality rates relating to deaths from all causes within the same year, except for areas whose A.C.F. may be unreliable for certain years. Local adjusted death rates are not valid in respect of deaths from particular causes.

**Standardized time-comparisons** may be constructed for a local area to show the extent to which the pace and direction of trend of its death rates, after adjustment for differences between its sex and age composition and that of the country as a whole, differ from the trend of the national death rate. An index number appropriate for this purpose may be formed for each year by multiplying the ratio of the local adjusted death rate to the national rate, by the national C.M.I. Since this index incorporates the A.C.F. its validity in the case of a few areas whose population sex-age structures are changing rapidly is questionable.

### **The General Trend of Mortality**

Table XLVI (page 96) shows, for each sex (*a*) the crude death rate for all causes and (*b*) the Comparative Mortality Index for all causes. Both the crude rate and the C.M.I. were appreciably higher in 1951 than 1950. The crude rates, both for males and females, were higher than for any year since 1941 and higher than during the inter-war period, as represented by the mean rates for 1921-30 and 1931-40. Bearing in mind the severity of the influenza epidemic early in 1951 the rise between 1950 and 1951 in the C.M.I.'s does not afford any evidence of significant departure from the levels of mortality prevailing since the end of the war. Unlike the crude death rates, the C.M.I.'s are, however, appreciably lower than before the war. Changes in the age-structure of the population are shown in Table XLVII (page 97) and the 1950 Medical Text contains a discussion of their effect on the crude death rates, which would in the absence of such changes have fallen faster in the present century up to 1930, and would have continued to fall thereafter, given the same course of the mortality rates at separate ages. The fall in the C.M.I. between the 1841-50 decade and the 1941-50 decade, amounting to 57 per cent for males and 64 per cent for females, gives a better indication than the crude rate of the reduction in mortality which has taken place in the last hundred years.

### **Life-table Survival Factors and Expectations of Life**

Abridged life-tables, relating to the mortality experience of each calendar year are published annually in the Registrar General's Quarterly Return of Births and Deaths\* (usually the issue for the December quarter). They

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\* H.M.S.O., price 2s. net, by post 2s. 1½d.



illustrate other aspects of the effect of mortality on the population. Table XLVIII (page 97) represents certain functions of an abridged life-table based on the mean death rates of the three years 1950–52. In contrast to those based on one year's experience it illustrates current mortality divested to a large extent of short-term fluctuations as, for example, the increase in mortality in 1951 associated with the influenza epidemic. The fact that this table relates to civilian population and civilian deaths is of no material consequence.

Life-table functions derived from deaths in a given calendar period display conditions which are hypothetical in that the figures in them relating to persons of a given age would only represent the actual experience of the group of persons of that age in the population of the country if the mortality rates in the life-table applied throughout the life-time of that age-group. To the extent that mortality rates are decreasing with time a life-table based on current experience will not represent, for example, the mortality conditions to which persons now aged 60 have been subject since the age of 40, since at the age of 40 such people will have been subject to the higher mortality of twenty years ago. It is in this sense that a life-table is a representation of the mortality conditions of a given period : the figures for  $l_x$  for males aged 40 and 60 in Table XLVIII show that of 10,000 male children born and hypothetically subject throughout their lives to the mortality rates of 1950–52, 9,198 would survive to the age of 40 and 7,604 to the age of 60. Likewise the  $e_x^0$  column shows that males now aged 40 might expect on average to live another thirty-one years if mortality rates now current apply to them throughout the remainder of their lives. To the extent that there are further declines in mortality rates of males in age-groups over 40, in the years ahead, those now aged 40 will, on average, live longer than thirty-one more years.

Table XLVIII exhibits the comparatively heavy losses through death of infants in the first year of life, implied in current mortality, and the comparatively small rates of loss thereafter up to age 40 or 50. 3·26 per cent of male children born would be lost through death in the first year of life, but only a further 4·76 (96·74–91·98) per cent during the whole of the following thirty-nine years. The corresponding figures for females are 2·51 and 3·73 respectively. In the case of males over 90 per cent of those born would survive to age 45 ; in the case of females over 90 per cent would survive to age 50. It is only at ages over 50 that losses to the population through death become serious, but at age 65 nearly two-thirds of the male children born and more than three-quarters of the female children born would be still alive. By age 80, however, the male population would be reduced to about a third of its numbers at age 65, and the female population aged 65 would be halved, the numbers at age 80 being 21 per cent and 36 per cent respectively of the numbers born.

The life-table demonstrates conveniently that, with current mortality, about 96 per cent of boys born and 97 per cent of girls born would survive to go to school and enter the working age-group at age 15. Of the male population of working age more than two-thirds of those who enter at age 15 might expect to survive to retiring age at 65. In the case of women 87 per cent of those aged 15 would expect to survive to age 60, and 80 per cent to age 65.

The table also shows in the  $e_x^0$  column, that on 1950–52 mortality the expectation of life at birth is 66·47 years for males and 71·48 years for females. At age 1 the expectations are slightly higher, being the expectations of infants who have survived the comparatively critical first year of life. After age 1 the expectations decline as age advances, at first slowly but at later ages more rapidly. At age 15, males would expect a further 54·44 years of life and females 58·93. At the customary retiring ages males at age 65 would expect nearly twelve more



years of life ; females at age 60 would expect eighteen years, and at age 65 would expect more than fourteen years.

The table demonstrates the more severe impact of mortality on males as compared with females. At every age both the survival function ( $l_x$ ) and the expectation of life ( $e_x^o$ ) is higher for females. There is a difference of four or five years between the male and female expectations of life at all ages up to 50. Thereafter differences still persist but are smaller.

As it stands, the life-table does not provide information about the ratio of males to females at given ages in a hypothetical population in which the number of children born annually, and the age death rates, remain constant. If it is to demonstrate sex ratios which would accrue under these hypothetical conditions an assumption must also be made about the ratio of male to female births. In 1951 there were 9,435 female live births per 10,000 male live births. Although the  $l_x$  life-table function is not the most appropriate one with which to demonstrate sex-ratios it may be noted that if the figures in the  $l_x$  column for females are multiplied by the ratio 9,435/10,000 the resulting figures will be smaller than the figures on the same line in the  $l_x$  column for males, for all ages shown up to and including 55. Thereafter an excess of females is shown which grows proportionately larger as age advances. The figures are as follows :—

Age x	$l_x$ males	$l_x$ females $\times \frac{9,435}{10,000}$	Col. (2) as per cent of col. (1)
	(1)	(2)	(3)
0	10,000	9,435	94
15	9,561	9,115	95
30	9,383	8,992	96
45	9,042	8,731	97
50	8,768	8,553	98
55	8,311	8,287	100
60	7,604	7,893	104
65	6,583	7,299	111
70	5,256	6,396	122
75	3,713	5,103	137
80	2,126	3,426	161
85	880	1,712	195

It is clear that the excess of male over female births accounts for an excess of males in this hypothetical population at ages up to 55, at which point the higher mortality of males outweighs the advantage of the more numerous male births.

Table XLIX (page 98) demonstrates the increase in expectations of life inherent in the gradually decreasing mortality rates of the last hundred years. The expectation of life at birth for males has increased from 40 in 1838–44 to 66 in 1950–52, and for females from 42 to 71 in the same period. Improvement has thus been rather greater for females than for males. In this period the expectations of life at age 1 year have increased from 47 to 68 for males and from 47 to 72 for females. With the considerable reduction in infant mortality which has taken place in this period the difference between expectations of life at age 0 and at age 1 has been reduced. The bulk of the improvement in expectations of life has taken place during the present century.

**Quarterly Deaths and Death Rates**

Numbers of deaths registered in England and Wales and death rates (excluding deaths of non-civilians between September, 1939, and December, 1949) for

each calendar quarter, are given in Table 5 (Part I) by decennial periods from 1841 and by single years from 1941. Earlier Reviews carry the annual rates further back. Table L (page 98) gives quarterly rates by single years from 1931, the rate in each quarter being also shown as a percentage of the annual rate. The rate of 19·1 for the March quarter of 1951 is the highest rate shown for this quarter in the last twenty-one years with the exception of 1940. In both these years the excess numbers of deaths in the March quarter were largely from influenza, pneumonia and bronchitis. The exceptional experience was not in 1940 so narrowly confined to its first quarter, the ratio of the March rate to the yearly rate being smaller than in 1951.

In contrast to the exceptional severity of mortality in the first quarter of 1951, the rates for both the third and fourth quarters were the lowest of any in the twenty-one years shown.

### Death Rates by Sex and Age

Table LI (page 99) gives death rates for each sex at separate ages for periods from 1841 to 1951. The substantial improvement over the whole period, which has been much greater among young people than among the elderly, and which has been more pronounced for females than for males, was discussed at some length in the Review for 1950.

The figures for the single year 1951 in this table are mainly of interest in demonstrating which sex-age groups are responsible for the abnormal characteristics of 1951 mortality. Expressing the rates for 1951 as a percentage of the corresponding mean rates for 1946–50, the following figures are obtained :—

#### Death rates in 1951 per cent of mean rates for 1946–50

	All Ages	0–	5–	15–	25–	45–	65–	85 and over
Males ..	110	70	77	80	89	103	116	132
Females ..	108	70	69	60	84	100	111	126

Whereas the crude death rate for all ages in 1951 was some 10 per cent higher for each sex than the mean rate for 1946–50, the rates for children under 5 were 30 per cent lower, and those for the highest age-group shown, 85 and over, were about 30 per cent higher. The steady upward progression of these ratios, with advancement of age, indicates that the abnormal circumstances of 1951 impinged the more heavily the older the persons concerned. This is further illustrated in Table LIII (page 102) which shows deaths by selected causes in 1939, 1950 and 1951.

### Comparative Mortality in Different Parts of England and Wales

Table 12 (Part I) is the basic table which provides the statistics of deaths and the estimates of mid-year home population for local authority areas and the usual aggregates by region and density. It also sets out for each such area the crude death rate, the area comparability factor (A.C.F.), and the ratio to the rate for England and Wales of the death rate adjusted for the varying age-structures of local populations by means of the A.C.F. Infant and neonatal deaths and stillbirths and infant mortality rates are also given in this table.

The variations in mortality in areas affected by different climatic and social conditions, and with different industrial environments, are well demonstrated



in the classification of areas by regions, conurbations and density aggregates. Table LII (page 100) supplements the crude and standardized rates given in Table 12 by providing more detailed analysis by sex and age for the regions, conurbations and density aggregates in each of five regional groups\* which broadly represent the North of England, the Midlands and East, Greater London, other parts of the South, and Wales. The local adjusted death rates which can be derived from Table 12 show that variations in age-structure do not account for the comparatively high death rates of the North of England and of Wales, nor for the comparatively low death rates of Greater London. Table LII supplements this evidence by showing that these variations are to be found in every sex and age group and must therefore be attributed to real differences in the mortality risks to which persons of the same age living in different parts of the country are exposed. The differences are, however, more pronounced at some ages than others in different parts of the country. Expressing the sex-age rates for these five groups of regions as ratios of the corresponding rate for England and Wales provides the following figures :—

**Ratio of sex-age death rate of each regional group to the corresponding rate for England and Wales**

Regional group	Males						Females					
	0—	5—	15—	45—	65 & over	All ages	0—	5—	15—	45—	65 & over	All ages
North of England .. ..	1·19	1·03	1·17	1·13	1·07	1·09	1·14	1·02	1·15	1·12	1·09	1·06
Midlands and Eastern regions .. ..	0·97	1·03	0·95	0·91	0·97	0·93	1·00	0·98	0·97	0·96	0·98	0·93
Greater London .. ..	0·76	0·82	0·89	0·97	0·98	0·93	0·80	1·02	0·88	0·90	0·94	0·90
South of England .. ..	0·88	1·00	0·85	0·89	0·94	0·98	0·87	0·95	0·89	0·91	0·93	1·05
Wales .. ..	1·24	1·25	1·18	1·13	1·07	1·14	1·29	1·27	1·20	1·13	1·09	1·07
England and Wales ..	1·00	1·00	1·00	1·00	1·00	1·00	1·00	1·00	1·00	1·00	1·00	1·00

It is to be expected that the variation between areas in these ratios should be greater for the younger age-groups which are more sensitive to accidents, infections and other environmental risks and less to the effects of organic disease which are the predominant causes of death of the elderly. The differences between these regional groups are most pronounced for the three age-groups 0–4, 5–14 and 15–44. For the North of England, the high levels of the age-death rates for age-groups 0–4 and 15–44, and for Wales the high levels in all three age-groups under age 45, by comparison with England and Wales, are more pronounced than elsewhere in the age-range. For Greater London and the South of England, again with exceptions in respect of the 5–14 age-group, the lower levels, by comparison with England and Wales are more pronounced in these age-groups. For the North of England and in Wales the ratios for the three age-groups 15–44, 45–64 and 65 and over respectively are in descending order ; for Greater London they are in ascending order. It is clear that the mortality differentials between these broad regions are not the same as between one age-group and another.

The differences by conurbation and density aggregate shown in Table LII are on the whole less pronounced than the differences by region, and they are smaller for females than males. Comparison between this part of the

\* The composition of the four English groups is as follows : North of England : *Northern, East and West Ridings and North Western Regions* ; Midlands and East : *North Midland, Midland and Eastern Regions* ; Greater London : *Greater London Conurbation* ; South of England : *remainder of South East, Southern and South Western Regions*.



table and the corresponding analysis in the Medical Text for 1950 gives some indication of the extent to which these variations may be due to factors of variable local significance like the weather and the geographical incidence of epidemics. The table shows that, over and above fluctuations of this sort, death rates for areas outside the conurbations are, on average, appreciably higher in urban than rural areas, and that this is true for all age-groups. Among these areas the figures suggest a gradient by density aggregate which is seen best in the rates for males in the age-group 45-64. The corresponding but less pronounced gradient for the 0-4 age-group for males was less clearly defined in 1950 when the rates for urban areas of 50-100,000 population and of those under 50,000 were higher than that for the aggregate of the largest towns outside the conurbations. The rates for the two age-groups 5-14 and 15-44 are too small and too variable from one period to another for any gradient or lack of gradient to be discernible from these figures, as may be seen by comparing the corresponding 1950 and 1951 figures; the gradients suggested by the 1951 figures for both males and females aged 15-44 were not shown in 1950. The fact that the figures for the middle-sized towns for age-group 65 and over, for either sex, are out of step with such a gradient is not of significance as it stands, since small differences of this sort might be due to differences of age-composition of population within the 65-and-over age-group, but a measure of standardization accentuates the difference between the rates for this middle group of urban areas and the higher rates for the other two groups.

The fact that a definite gradient is discernible in the rates for the four classes of area outside the conurbations in the 45-64 age-group for males suggests an association between health and environmental conditions of work. This evidence may be considered with that relating to Greater London and the five provincial conurbations. Much of the population of Greater London lives in modern suburban conditions, which may be responsible to a large extent for the fact that its mortality rates, particularly in the younger age-groups, are considerably lower than those of the country as a whole. The West Midland conurbation also contains a good deal of modern suburban development and its death rates, though higher than those of England and Wales, are not very different from those of the group of largest towns outside the conurbations, and are much lower than those of the other conurbations in the older industrial centres further north. Brief reference was made in the 1950 Text to housing and socio-economic characteristics of areas which the one per cent sample tables\* of the 1951 census of population illuminates. These factors will be analysed in more detail, and correlated with mortality rates, in a future report when the full census information for local areas is available.

In the following table use has been made of the comparative mortality indices (C.M.I.) to give a summary indication of the differences between 1951 and previous years in the mortality rates which are shown in Table LII for 1951 and have been discussed above. It gives, for England and Wales, Greater London and the density aggregates in 1934, 1938, 1948, 1950 and 1951:—

- (a) crude death rates ;
- (b) ratios of local adjusted death rates to national death rate ;
- (c) those ratios multiplied by C.M.I.'s to combine the area comparisons with comparisons of the overall trends of mortality (after correction for population changes). The final ratios express the local adjusted mortality in relation to the national mortality in 1938.

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\* Census, 1951, Great Britain, One Per Cent Sample Tables, Parts I and II. H.M.S.O., price 17s. 6d. and 40s. net respectively.



				England and Wales	Greater London	County Boroughs	Other Urban Areas	Rural Districts		
(a) Crude death rates										
1934	..	..	..	11.8	11.0	12.3	11.8	11.8		
1938	..	..	..	11.6	10.2	12.3	11.8	11.7		
1948	..	..	..	11.0	9.9	11.5	11.3	10.6		
						Urban Areas*				
						1	2	3	4	Rural Areas
1950	..	..	..	11.6	10.4	11.3	11.8	12.3	12.3	11.3
1951	..	..	..	12.5	11.4	12.4	12.9	13.0	13.2	11.8
(b) Ratios of "local" adjusted to national rates in the same year.										
1934	..	..	..	1.00	0.97	1.10	0.99			0.90
1938	..	..	..	1.00	0.91	1.12	1.01			0.90
1948	..	..	..	1.00	0.94	1.10	1.01			0.90
						Urban Areas*				
						1	2	3	4	Rural Areas
1950	..	..	..	1.00	0.92	1.02	1.05	1.02	1.01	0.92
1951	..	..	..	1.00	0.94	1.04	1.06	1.00	1.00	0.89
(c) Ratios adjusted to national mortality trend (1938 as base)										
1934	..	..	..	1.07	1.04	1.18	1.06			0.96
1938	..	..	..	1.00	0.91	1.12	1.01			0.90
1948	..	..	..	0.80	0.75	0.88	0.81			0.72
						Urban Areas*				
						1	2	3	4	Rural Areas
1950	..	..	..	0.84	0.77	0.86	0.88	0.86	0.85	0.77
1951	..	..	..	0.90	0.85	0.94	0.95	0.90	0.90	0.80

\* 1. Conurbations.

2. Urban areas outside conurbations with populations of 100,000 and over.

3. " " " " " " " " 50,000 and under 100,000.

4. " " " " " " " " under 50,000.

It is clear that the general pattern of differentials between the classes of area shown in this table is similar in 1950 and 1951. The higher level of mortality in 1951 has, however, affected Greater London and the other conurbations more seriously than the rural areas. Standardized mortality as expressed in the ratios given in (c) above has increased between 1950 and 1951 by 10 per cent for Greater London, 9 per cent for the aggregate of the other conurbations, 8, 5 and 6 per cent respectively for the three groups of urban areas outside the conurbations, and only 4 per cent. for rural areas.

### Principal Causes of Death at Different Ages

Table LIII (page 102) shows death rates by cause according to a summary classification derived from the Registrar General's Abridged List (see Table 20 of Part I), by sex and broad age-groups for 1939, 1950 and 1951. Notwithstanding the changes in classification of causes of death which have been made since 1939, comparability is sufficient, for the cause-groups listed, to demonstrate

the broad changes that have taken place since before the war. Comparison between 1950 and 1951 gives some indication of the sections of the population most affected by the 1951 influenza epidemic.

Deaths by cause for separate age-groups were analysed in some detail in the 1948-1949 Medical Text, mainly for the period between 1936 and 1949. In the 1950 Text the secular trend from the middle of the last century was discussed in terms of rates relating to three periods 1848-72, 1901-10 and 1950. In both these studies the analysis by cause was designed separately for each age-group discussed. The present table analyses each age-group in terms of the same list of cause-groups, covering about 90 per cent of all deaths (more than 75 per cent for any age-group) in the groups exclusive of the remainder group. It thus enables the varying impact of a particular group of causes in different parts of the age-range to be seen, in addition to showing which are the predominant causes of death in each age-group.

At ages 1-4, out of a total of 1,448 male deaths in 1951 per million males living, 343 were from tuberculosis and other infective and parasitic diseases, 303 were from accidents, 176 from pneumonia and 106 from congenital malformations. Of 1,260 female deaths per million 327 were from tuberculosis and other infective and parasitic diseases, 209 from accidents, 188 from pneumonia and 93 from congenital malformations. The higher figure for accidents for male children accounts for half the difference between the sexes in the death rate for all causes. There were no substantial differences between the rates for 1950 and 1951, but the death rates from all causes are now less than half as high as in 1939, those for infective and parasitic diseases other than tuberculosis, and for pneumonia, having fallen to about a quarter of their 1939 levels.

Death rates in the 5-14 age-group (614 per million for males and 412 for females in 1951) were less than half as high as in the 1-4 group, the most important causes for males being accidents which accounted for over a third of all the deaths in this sex-age-group in 1951. Deaths of females from accidents were comparatively few, the difference between males and females accounting for most of the difference between the sexes in the death rate from all causes in this age-group. Although death rates from all causes in this age-group declined for males by 55 per cent and for females by 64 per cent between 1939 and 1951, the death rate of males from accidents declined by only 29 per cent. The rate for infective and parasitic diseases including tuberculosis, however, which in 1939 was 406 per million for males and 414 for females, had been reduced by 1951 to 77 and 80 respectively.

At ages 15-24 death rates from non-accidental causes were still so small that in 1951 accidents were the predominant cause of death of males and largely accounted for the difference between the death rates from all causes of males and females. The rate of 449 per million for accidents was higher than for any other age-group of persons under age 65, and was the only age-group in which motor vehicle accidents accounted for more male deaths than other kinds of accident. In this age-group respiratory tuberculosis begins to assume importance as a cause of death: the death rate in 1951 from this cause, though small (111 per million for males and 196 for females), accounted for nearly 10 per cent of all male deaths and more than a quarter of all female deaths. It represents, however, considerable improvement over the position in 1939, when the corresponding rates were 510 for males and 762 for females. The improvement in this age-group since 1939 for females, for whom the disease is more serious, has not been as great as for males.



At ages 25–44 organic diseases predominate over accidents as causes of death, and cancer and circulatory diseases assume importance as well as respiratory tuberculosis. Deaths from accidents are still important for males, but with rates lower than in the 15–24 age-group, and deaths from accident account for only 15 per cent of all male deaths. The death rate from all causes for this age-group has fallen from 3,520 per million in 1939 to 2,292 in 1951 for males, and from 2,970 to 1,822 for females. A serious cause of death in this age-group is cancer, both from the point of view of its numerical incidence in 1951 and because the death rate from this cause is increasing. Excluding leukæmia, malignant neoplasms accounted in 1951 for 363 deaths per million of males and 433 deaths per million of females. For males this represents a considerable increase over the 1939 rate and the same is true also for the older age-groups. Expressing the rates for 1951 as per cent of the rates for 1939 in this and following age-groups gives the following comparison :—

Age-group	Males	Females
25–44	118	100
45–64	113	90
65–74	110	92
75 and over	112	101

The death rate from diseases of the circulatory system in the 25–44 age-group, at 383 per million for males, shows little change from 1939, but that of 279 for females in 1951 is considerably lower than in 1939. The death rates from respiratory tuberculosis, 328 for males and 291 for females, are each less than half their 1939 levels. Altogether cancer, tuberculosis and diseases of the circulatory system accounted in 1951 for 47 per cent of male deaths and 55 per cent of female deaths in this age-group.

At ages 45–64 the impact of physical deterioration and lessening resistance to disease begins to make itself felt, and the superior longevity of women is much in evidence. Death rates from all causes were 15,016 per million males in 1951 and 8,810 per million females. These figures represent rates for males six times as high and for females nearly five times as high as for the 25–44 age-group. As for the 25–44 age-group cancer and diseases of the circulatory system are the predominant causes of death but the rates for age-group 45–64 are for cancer 9 times as high as in the 25–44 age-group for males and 6 times as high for females, and for diseases of the circulatory system nearly 12 times as high for males and 8 times as high for females. For respiratory tuberculosis on the other hand the rate for females is less than for the previous age-group. In the 45–64 age-group respiratory diseases and vascular lesions of the central nervous system become important, the former accounting for 2,601 deaths per million for males and 898 for females, the latter accounting for 1,133 deaths per million for males and 1,189 for females. Cardio-vascular diseases as a whole account for more than a third of all deaths. The rates for respiratory diseases as a whole are very similar to those for 1939, being appreciably higher than in 1950. The advantage gained from the reduction in numbers of pneumonia deaths was in 1951 offset by the effects of the influenza epidemic.

At ages 65–74 the death-rates from all causes, 59,056 per million for males and 36,980 for females, were about four times as high as in the 45–64 age-group. More than half the deaths in this age-group in 1951 were from cardio-vascular diseases, including cerebral vascular lesions which accounted for nearly 30,000 deaths per million males and more than 20,000 deaths per million females.

Cancer accounted for 10,486 deaths per million males and 6,395 per million females ; respiratory diseases for 10,201 male deaths per million but only 4,905 female deaths per million. These three groups of causes accounted for over 85 per cent of all the deaths of either sex in 1951 in this age-group. Rates for influenza were 1,668 for males in 1951 compared with 722 in 1939 and 1,329 for females in 1951 compared with 646 in 1939. The rates for pneumonia were not very different in these two years but for bronchitis, which has a higher death rate for males than for females in this age-group, the rate for 1951 for males was substantially higher than in 1939.

As for the previous age-group the predominant causes of death of persons over 75 years of age, whether male or female, are the cardio-vascular diseases, cancer, and respiratory diseases, which together account for almost the same proportion (85 per cent) of all deaths as for age-group 65-74. Cardio-vascular diseases are, for the 75 and over age-group, relatively more important and cancer is relatively less important than for the previous age-group. The death rates for influenza of 4,447 per million for males and 4,411 for females were about twice as high in 1951 as in 1939, and nearly three times as high for this age-group as for the 65-74 age-group. For this broad age-group the smaller differences between the death rates of males and females are not very illuminating because of the different age-composition of its male and female sections. A measure of standardization, however, confirms the substantially lower death rates of females as compared with males for each of these three predominant groups of causes.

**Table XLVI.—Crude death rates per 1,000 living and comparative mortality indices 1841-1950 and 1941 to 1951**

Period	Crude death rate per 1,000 living		Comparative Mortality Index* (1938 base)	
	M	F	M	F
1841-50 .. ..	23.1	21.6	2.12	2.44
1851-60 .. ..	23.1	21.4	2.09	2.37
1861-70 .. ..	23.7	21.4	2.14	2.37
1871-80 .. ..	22.7	20.1	2.09	2.27
1881-90 .. ..	20.3	18.1	1.93	2.10
1891-1900 .. ..	19.3	17.1	1.87	2.01
1901-10 .. ..	16.4	14.4	1.60	1.69
1911-20 .. ..	15.1	13.0	1.45	1.49
1921-30 .. ..	12.9	11.4	1.16	1.22
1931-40 .. ..	13.0	11.5	1.07	1.10
1941-50 .. ..	14.1	11.0	0.92	0.89
1941 .. ..	14.0	11.8	1.10	1.04
1942 .. ..	12.5	10.5	0.97	0.92
1943 .. ..	12.7	11.1	0.98	0.94
1944 .. ..	12.6	10.7	0.95	0.89
1945 .. ..	12.3	10.7	0.92	0.88
1946 .. ..	12.2	10.9	0.89	0.88
1947 .. ..	12.9	11.2	0.92	0.89
1948 .. ..	11.5	10.1	0.82	0.79
1949 .. ..	12.3	11.1	0.86	0.85
1950 .. ..	12.3	11.0	0.85	0.83
1951 .. ..	13.4	11.8	0.92	0.88

\* Based upon civilian mortality only during the periods 1914-18 and 1939-49.



Table XLVII.—Population of persons in England and Wales by ages, per 10,000 at all ages, 1901, 1911, 1921, 1931, 1939 and 1951

Age last birthday			1901 Census	1911 Census	1921 Census	1931 Census	1939 Mid-year	1951 Census*
0—	...	...	1,143	1,069	877	749	690	858
5—	...	...	2,099	1,995	1,895	1,635	1,415	1,392
15—	...	...	1,958	1,805	1,756	1,734	1,592	1,296
25—	...	...	1,616	1,651	1,520	1,605	1,671	1,442
35—	...	...	1,228	1,344	1,411	1,368	1,465	1,527
45—	...	...	892	978	1,167	1,235	1,244	1,362
55—	...	...	597	637	769	932	1,026	1,037
65—	...	...	331	377	434	536	643	737
75—	...	...	121	126	151	182	225	306
85 and over	...	...	15	18	20	24	29	43
All ages	...	...	10,000	10,000	10,000	10,000	10,000	10,000

\* One per cent sample.

Table XLVIII.—Abridged Life Table 1950–52, England and Wales. Civilian population

Age $x$		Males		Females	
		$l_x$	$o_x^e$	$l_x$	$o_x^e$
0	..	10,000	66.47	10,000	71.48
1	..	9,674	67.70	9,749	72.32
2	..	9,651	66.86	9,728	71.47
3	..	9,637	65.96	9,717	70.55
4	..	9,627	65.03	9,708	69.62
5	..	9,619	64.08	9,702	68.66
10	..	9,587	59.28	9,680	63.81
15	..	9,561	54.44	9,661.	58.93
20	..	9,517	49.68	9,630	54.11
25	..	9,452	45.00	9,586	49.35
30	..	9,383	40.32	9,530	44.63
35	..	9,303	35.64	9,463	39.92
40	..	9,198	31.02	9,376	35.27
45	..	9,042	26.51	9,254	30.70
50	..	8,768	22.26	9,065	26.29
55	..	8,311	18.35	8,783	22.05
60	..	7,604	14.82	8,366	18.03
65	..	6,583	11.73	7,736	14.29
70	..	5,256	9.06	6,779	10.96
75	..	3,713	6.79	5,409	8.10
80	..	2,126	4.99	3,631	5.84
85	..	880	3.53	1,815	4.19

The column headed  $l_x$  shows the numbers who would survive to exact age  $x$  out of 10,000 born who were subject throughout their lives to the death probabilities indicated by the 1950–52 death records. Column  $o_x^e$  is the “expectation of life,” that is the average future lifetime which would be lived by persons aged exactly  $x$ , if likewise subject to these death probabilities.

Table XLIX.—Expectation of life at birth and at age 1 year, 1838–1932, 1950–1952 and 1943 to 1952, England and Wales

Life Table	Year	Expectation of life at			
		Birth		Age 1 year	
		Male	Female	Male	Female
English Life Table :					
No. 2 .. ..	1838-44	40	42	47	47
3 .. ..	1838-54	40	42	47	47
4 .. ..	1871-80	41	45	48	50
5 .. ..	1881-90	44	47	51	53
6 .. ..	1891-1900	44	48	52	55
7 .. ..	1901-10	49	52	56	58
8 .. ..	1910-12	52	55	58	60
9 .. ..	1920-22	56	60	60	63
10 .. ..	1930-32	59	63	62	65
Abridged Life Table ..	1950-52	66	71	68	72
From annual	1943	62	67	64	69
Abridged Life Tables	1944	62	68	64	70
	1945	63	69	65	71
	1946	65	69	67	71
	1947	64	69	67	71
	1948	66	71	68	72
	1949	66	71	68	72
	1950	67	71	68	72
	1951	66	71	67	72
	1952	67	72	68	73

Table L.—Quarterly death rates in each year 1931 to 1951, with ratio to yearly rate taken as 100

Year	Death rate per 1,000 living				Ratio to yearly rate taken as 100			
	March	June	September	December	March	June	September	December
1931	16.5	11.5	9.6	11.7	134	93	78	95
1932	15.4	11.6	9.7	11.5	128	97	81	96
1933	17.1	10.8	9.4	12.0	139	88	76	98
1934	14.6	11.8	9.6	11.2	124	100	81	95
1935	13.2	12.0	9.8	12.0	113	103	84	103
1936	15.1	11.8	9.7	12.0	125	98	80	99
1937	16.2	11.6	9.7	12.3	131	94	78	99
1938	13.6	11.6	9.9	11.5	117	100	85	99
1939	15.1	11.7	9.9	11.8	125	97	82	98
1940	20.6	11.9	10.8	14.1	143	83	75	98
1941	18.4	14.2	10.1	11.5	136	105	75	85
1942	15.8	12.0	9.8	11.6	128	98	80	94
1943	14.5	11.7	10.1	15.7	112	90	78	121
1944	15.3	12.0	11.0	12.7	120	94	87	100
1945	16.5	11.5	10.0	12.6	131	91	79	100
1946	15.4	11.2	9.7	11.9	128	93	81	99
1947	17.6	11.3	9.2	11.4	143	92	75	93
1948	12.4	10.3	9.4	11.7	113	94	85	106
1949	15.2	11.2	9.3	11.8	129	95	79	100
1950	14.0	11.1	9.3	12.3	120	95	80	106
1951	19.1	11.1	9.1	11.0	152	88	73	88



Table LI.—Death rates per 1,000 living by sex and age, 1841–1951

	Males								Females							
	All ages	0–	5–	15–	25–	45–	65–	85 and over	All ages	0–	5–	15–	25–	45–	65–	85 and over
1841–1850...	23.1	71.3	7.24	8.23	11.2	23.6	89.6	312.3	21.6	61.2	7.27	8.50	11.6	21.1	82.4	293.2
1851–1860...	23.1	72.7	6.79	7.71	10.9	23.2	86.8	308.3	21.4	63.0	6.84	7.98	10.9	20.1	80.0	289.0
1861–1870...	23.7	73.5	6.43	7.26	11.5	24.8	87.7	315.0	21.4	63.7	6.25	7.30	10.7	20.6	79.8	285.0
1871–1880...	22.7	68.4	5.29	6.24	11.3	26.1	90.2	327.4	20.1	58.3	5.05	6.12	9.92	21.0	80.9	296.4
1881–1890...	20.3	61.6	4.20	4.97	9.79	25.5	89.4	306.0	18.1	51.9	4.23	4.97	8.76	20.6	78.9	271.0
1891–1900...	19.3	62.7	3.40	4.38	8.82	25.2	89.4	286.7	17.1	52.8	3.49	4.06	7.58	20.3	79.5	261.3
1901–1905...	17.1	54.7	2.93	3.77	7.59	23.0	83.4	274.6	15.0	45.8	3.03	3.34	6.34	18.1	72.5	249.4
1906–1910...	15.6	45.4	2.67	3.45	6.76	21.7	82.0	283.0	13.8	38.0	2.78	3.05	5.60	16.9	70.8	250.9
1911–1915...	15.5	40.9	2.75	3.69	6.76	21.0	81.7	281.6	13.3	34.0	2.75	3.00	5.17	16.0	69.5	245.4
1916–1920...	14.9	34.4	3.11	4.85	7.61	19.5	81.1	267.8	12.8	28.4	3.18	4.06	5.91	14.4	65.9	241.9
1921–1925...	12.9	27.0	2.10	3.06	5.24	16.9	76.2	272.7	11.4	21.8	2.05	2.83	4.26	12.8	64.0	241.2
1926–1930...	12.9	23.1	2.06	2.93	4.84	17.0	76.3	298.1	11.4	18.5	1.90	2.67	3.97	12.4	62.5	254.4
1931–1935...	12.7	20.1	1.84	2.81	4.23	16.6	75.1	278.9	11.4	16.0	1.71	2.51	3.67	11.9	61.0	245.0
1936–1940...	13.3	17.5	1.60	2.64	3.95	17.3	76.2	286.9	11.6	13.7	1.40	2.17	3.22	11.5	60.1	253.0
1941–1945...	12.8	15.5	1.44	2.99	3.72	15.7	69.0	227.0	10.9	12.3	1.13	1.98	2.84	9.86	52.6	207.0
1946–1950...	12.2	10.5	0.79	1.42	2.58	14.5	69.9	241.6	10.9	8.14	0.59	1.29	2.17	8.79	52.1	208.9
1951	13.4	7.36	0.61	1.14	2.29	15.0	81.2	318.2	11.8	5.68	0.41	0.77	1.82	8.81	57.7	264.2

Table LII.—All Causes : Death rates per 1,000 living by sex and age in regions and population density aggregates, 1951

	Males						Females					
	0-	5-	15-	45-	65 and over	All ages	0-	5-	15-	45-	65 and over	All ages
<b>ENGLAND AND WALES</b> .. ..	7.36	0.61	1.95	15.0	88.3	13.4	5.68	0.41	1.50	8.81	67.5	11.8
Conurbations .. ..	7.07	0.57	1.99	16.1	91.9	13.4	5.55	0.43	1.52	8.95	68.6	11.5
Areas outside conurbations:												
Urban areas with populations of 100,000 and over .. ..	7.79	0.66	2.06	16.2	93.2	14.0	5.82	0.43	1.64	9.06	69.2	11.9
Urban areas with populations of 50,000 and under 100,000 .. ..	7.67	0.61	1.95	15.3	87.8	13.7	5.66	0.39	1.51	8.88	67.3	12.3
Urban areas with populations under 50,000 .. ..	7.50	0.60	1.93	14.9	88.3	14.1	5.94	0.40	1.50	8.96	67.5	12.3
Rural areas .. ..	7.38	0.69	1.84	12.0	79.8	12.2	5.59	0.40	1.37	8.09	64.2	11.4
<b>NORTH OF ENGLAND</b>												
Regions:												
Northern .. ..	9.54	0.64	2.43	16.5	88.2	13.9	7.15	0.42	1.72	9.77	70.6	11.5
East and West Ridings .. ..	8.23	0.63	2.14	15.6	93.5	14.1	5.99	0.42	1.52	9.41	71.6	12.1
North Western .. ..	8.68	0.62	2.29	18.0	98.1	15.2	6.41	0.41	1.84	10.2	75.7	13.2
Total .. ..	8.75	0.63	2.28	17.0	94.4	14.6	6.46	0.42	1.72	9.88	73.4	12.5
Conurbations:												
Tyneside .. ..	9.21	0.62	2.60	17.3	90.1	14.3	7.41	0.35	1.76	9.81	71.8	11.4
West Yorkshire .. ..	8.28	0.68	2.12	16.9	98.4	15.5	6.07	0.44	1.45	9.82	73.9	13.4
South East Lancashire .. ..	8.38	0.60	2.13	18.3	98.6	15.2	6.23	0.36	1.86	10.6	76.2	13.4
Merseyside .. ..	9.41	0.50	2.59	20.0	103.2	14.6	7.17	0.44	2.00	9.98	77.0	12.1
Total .. ..	8.71	0.60	2.29	18.1	98.2	15.0	6.57	0.40	1.77	10.2	75.2	12.9
Areas outside conurbations:												
Urban areas with populations of 100,000 and over .. ..	8.79	0.64	2.43	17.1	95.6	14.6	6.79	0.50	1.80	9.77	73.4	12.3
Urban areas with populations of 50,000 and under 100,000 .. ..	9.37	0.65	2.21	18.2	92.5	14.9	6.80	0.53	1.70	10.1	75.2	12.7
Urban areas with populations under 50,000 .. ..	8.26	0.60	2.28	16.6	95.9	14.7	6.28	0.41	1.63	9.78	74.3	12.4
Rural areas .. ..	9.16	0.72	2.06	13.6	82.2	12.5	6.15	0.35	1.52	8.68	67.0	11.1
<b>MIDLANDS AND EASTERN</b>												
Regions :												
North Midland .. ..	6.97	0.63	1.84	13.2	83.5	12.4	5.58	0.34	1.53	8.31	65.9	11.0
Midland .. ..	7.92	0.64	2.03	15.3	90.6	12.5	6.08	0.46	1.54	9.03	70.1	10.9
Eastern .. ..	6.10	0.62	1.63	11.9	81.2	12.3	5.20	0.36	1.21	7.86	62.0	11.3
Total .. ..	7.12	0.63	1.86	13.7	85.3	12.4	5.68	0.40	1.45	8.46	66.2	11.0
Conurbation :												
West Midland .. ..	7.46	0.67	2.12	16.3	93.8	12.5	6.05	0.54	1.58	9.27	70.5	10.7
Areas outside conurbation :												
Urban areas with populations of 100,000 and over .. ..	7.00	0.63	1.87	15.8	89.1	13.0	5.89	0.32	1.51	8.58	66.8	11.3
Urban areas with populations of 50,000 and under 100,000 .. ..	6.73	0.51	1.86	14.1	87.2	12.0	5.48	0.33	1.38	8.30	62.0	10.7
Urban areas with populations under 50,000 .. ..	7.13	0.56	1.70	13.4	87.5	13.1	5.84	0.36	1.38	8.51	68.7	11.5
Rural areas .. ..	6.95	0.68	1.82	10.9	76.6	11.8	5.38	0.38	1.35	7.79	63.2	11.0
<b>GREATER LONDON</b> .. ..	5.62	0.50	1.73	14.6	86.6	12.4	4.56	0.42	1.32	7.96	63.2	10.6
<b>SOUTH OF ENGLAND</b>												
Regions :												
Remainder of South East .. ..	6.40	0.71	1.67	13.0	80.6	13.7	4.57	0.43	1.30	7.82	60.3	12.6
Southern .. ..	6.23	0.55	1.53	12.8	81.7	12.2	4.97	0.37	1.25	7.64	62.2	11.5
South Western .. ..	6.77	0.59	1.78	13.8	85.3	13.5	5.16	0.36	1.41	8.47	66.5	12.9
Total .. ..	6.48	0.61	1.66	13.3	82.6	13.1	4.92	0.39	1.33	8.00	63.1	12.4
Urban areas with populations of 100,000 and over .. ..	7.30	0.64	1.72	14.5	89.3	13.8	4.74	0.42	1.61	8.37	67.9	12.5
Urban areas with populations of 50,000 and under 100,000 .. ..	6.51	0.59	1.72	14.7	83.3	14.2	4.43	0.32	1.35	8.60	64.9	13.5
Urban areas with populations under 50,000 .. ..	6.47	0.58	1.65	13.6	86.6	14.0	5.44	0.41	1.31	8.00	62.6	12.8
Rural areas .. ..	6.38	0.67	1.66	11.8	79.2	12.2	4.89	0.38	1.18	7.61	61.1	11.6
<b>WALES</b>												
Regions :												
Wales I and II .. ..	9.11	0.76	2.30	16.9	94.6	15.3	7.31	0.52	1.80	9.93	73.5	12.6
Urban areas with populations of 100,000 and over .. ..	8.65	0.79	2.42	19.4	97.3	15.2	6.64	0.59	1.77	10.2	68.7	11.7
Urban areas with populations of 50,000 and under 100,000 .. ..	10.0	1.09	2.23	20.4	137.0	17.7	7.20	0.25	2.30	11.4	72.6	12.5
Urban areas with populations under 50,000 .. ..	9.12	0.75	2.28	17.4	95.1	15.7	7.80	0.45	1.86	9.98	73.1	12.9
Rural areas .. ..	9.18	0.77	2.19	14.4	88.9	14.5	7.58	0.62	1.70	9.52	76.6	12.6





Table LIII.—Death rates per million living at ag

Registrar General's Abridged List Numbers	Cause of death	1—			5—		
		1939	1950	1951	1939	1950	1951
	<b>All Causes .. .. .</b>	<b>3,719</b>	<b>1,424</b>	<b>1,4</b>		<b>657</b>	<b>614</b>
1	Tuberculosis, respiratory .. .. .	48	29	28	23	8	7
2	Tuberculosis, other forms .. .. .	384	134	127	114	42	35
3	*Syphilitic disease .. .. .	4	—	1	2	0	—
4-9	Other infective and parasitic diseases .. .. .	731	193	187	267	63	35
15	Leukæmia and aleukæmia .. .. .	42	50	49	18	24	31
10-14	Other malignant, lymphatic and hæmatopoietic neoplasms .. .. .	49	65	63	32	38	43
16	Diabetes .. .. .	3	2	3	11	3	4
17	*Vascular lesions of nervous system .. .. .	1	6	3	2	5	5
18-21	*Diseases of heart and arteries and other circula- tory diseases .. .. .	24	10	8	77	28	16
22	Influenza .. .. .	73	19	24	15	6	5
23	Pneumonia .. .. .	762	206	176	72	34	23
24-25	*Bronchitis and other respiratory disease .. .. .	209	73	76	42	21	17
26	Ulcer of stomach and duodenum .. .. .	—	1	—	—	1	0
27	*Gastritis, enteritis and diarrhœa .. .. .	160	50	41	16	3	4
29	Hyperplasia of prostate .. .. .	—	—	—	—	—	—
31	*Congenital malformations .. .. .	95	83	106	19	34	34
33	*Motor vehicle accidents .. .. .	144	101	128	156	97	105
34	All other accidents .. .. .	365	169	175	158	104	117
35	Suicide .. .. .	—	—	—	1	1	3
28, 30, 32, 36	All other causes .. .. .	625	233	253	331	145	130

	<b>All Causes .. .. .</b>	<b>3,260</b>	<b>1,273</b>	<b>1,260</b>	<b>1,135</b>	<b>471</b>	<b>412</b>
1	Tuberculosis, respiratory .. .. .	34	22	20	54	11	11
2	Tuberculosis, other forms .. .. .	336	137	126	106	38	39
3	*Syphilitic disease .. .. .	2	1	—	1	1	0
4-9	Other infective and parasitic diseases .. .. .	782	169	181	253	45	30
15	Leukæmia and aleukæmia .. .. .	26	43	50	14	24	21
10-14	Other malignant, lymphatic and hæmatopoietic neoplasms .. .. .	44	56	58	22	32	27
16	Diabetes .. .. .	7	4	4	14	7	5
17	*Vascular lesions of nervous system .. .. .	5	3	5	3	1	5
18-21	*Diseases of heart and arteries and other circula- tory disease .. .. .	21	3	5	71	21	18
22	Influenza .. .. .	67	15	26	18	6	6
23	Pneumonia .. .. .	683	207	188	73	27	21
24-25	*Bronchitis and other respiratory disease .. .. .	161	58	62	23	17	17
26	Ulcer of stomach and duodenum .. .. .	—	—	—	0	0	1
27	*Gastritis, enteritis and diarrhœa .. .. .	143	36	30	12	2	3
30	Pregnancy, childbirth and abortion .. .. .	—	—	—	—	—	—
31	*Congenital malformations .. .. .	110	105	93	21	24	22
33	*Motor vehicle accidents .. .. .	83	74	78	61	48	38
34	All other accidents .. .. .	231	121	131	55	37	32
35	Suicide .. .. .	—	—	—	0	0	—
28, 30, 32, 36	All other causes .. .. .	525	219	203	334	130	116

Note : Death rates for 1939 have been adjusted to conform with the 6th Revision of the International Classification of Diseases. The figures should therefore be regarded as approximate.



one year, by sex and cause, 1939, 1950, and 1951

	25-			45-			65-			75 and over		
1951	1939	1950	1951	1939	1950	1951	1939	1950	1951	1939	1950	1951
Males												
142	3,520	2,322	2,292	16,669	14,241	15,016	55,556	53,328	59,056	153,980	136,757	154,636
111	786	412	328	1,164	865	773	678	891	958	214	411	465
39	78	34	33	69	38	35	60	49	42	40	31	38
3	43	12	11	298	118	115	374	278	313	255	233	292
26	54	46	27	88	54	49	123	76	63	187	149	138
22	16	22	27	41	73	58	76	141	152	37	125	131
70	308	347	363	2,995	3,339	3,389	9,487	10,183	10,486	14,549	15,695	16,281
5	24	12	14	122	53	58	588	314	311	1,025	687	648
14	59	59	71	1,307	1,080	1,133	7,207	7,025	7,294	18,530	19,290	21,465
65	388	372	383	4,215	4,469	4,499	19,744	21,012	22,482	63,278	63,793	69,902
20	74	21	38	297	111	401	722	355	1,668	2,067	936	4,447
28	191	63	66	867	405	516	1,929	1,555	2,184	4,491	4,467	6,331
15	139	92	91	1,373	1,361	1,684	4,463	4,899	6,349	14,746	10,318	13,515
10	123	58	58	483	356	367	620	826	966	678	1005	1,229
4	24	15	12	84	44	44	174	115	138	475	330	352
—	0	—	0	154	74	60	1,641	1,080	1,059	5,711	4,774	4,664
32	17	32	30	16	48	50	6	48	41	13	28	63
247	221	134	142	291	124	134	563	242	232	1,052	439	507
202	276	181	201	461	269	278	745	434	471	2,499	1,580	1,764
39	136	97	99	359	264	248	470	416	412	451	421	478
190	563	313	298	1,985	1,096	1,125	5,886	3,389	3,435	23,682	12,045	11,926
Females												
771	2,970	1,897	1,822	10,988	8,578	8,810	40,586	34,697	36,980	125,145	114,797	127,233
196	595	356	291	329	221	187	237	212	198	145	144	137
44	56	22	21	39	27	28	43	30	33	46	37	41
2	17	5	5	74	37	37	77	93	81	70	100	103
18	42	34	24	61	38	38	82	60	56	161	129	96
15	14	20	23	32	48	55	56	96	104	52	78	93
51	432	428	433	2,862	2,642	2,572	6,980	6,600	6,395	11,067	11,230	11,127
12	26	15	14	213	98	100	832	545	518	1,047	793	830
8	59	70	71	1,251	1,152	1,189	6,359	6,417	6,452	16,858	19,590	20,835
70	442	287	279	2,639	2,260	2,250	14,514	12,694	14,215	52,683	55,903	59,819
14	68	20	39	194	68	224	646	282	1,329	2,277	931	4,411
18	130	54	50	409	215	254	1,336	946	1,281	3,725	3,793	5,425
18	45	44	50	410	312	420	2,571	719	2,295	10,516	6,837	8,875
1	18	10	10	97	64	62	205	208	230	287	421	517
8	28	18	16	70	39	43	196	155	154	467	396	398
35	244	74	16	4	3	4	—	—	1	—	—	2
23	12	28	29	19	43	50	9	43	47	12	41	46
42	33	18	21	70	41	43	206	84	101	329	200	201
26	41	26	29	145	84	79	614	363	378	3055	2,377	2,537
15	78	55	53	159	139	146	145	153	167	107	115	107
155	590	313	348	1,911	1,047	1,029	5,478	3,997	2,945	22,241	11,682	11,633

se causes of death marked \* adjustment has necessitated a certain amount of estimation and the

# INFANT MORTALITY AND STILLBIRTH

## Introduction

In the course of fifty years infant mortality has been reduced more than fourfold. During the decennium 1891–1900 between 1 in 6 and 1 in 7 live-born babies died in infancy within twelve months of birth; at this level of mortality—153 deaths in every 1,000 live births—it was the rule rather than the exception for poorer families in large cities to lose one or more of their babies by death. Fifty years later, during the corresponding ten-year period 1941–50, only about 1 in every 23 babies died before the first birthday. By 1951, the year under review, the chance of a liveborn baby dying before the first birthday had been further reduced to about 1 in 33.

A life-table prepared for 1891–1900 showed that the average expectation of life at birth would have increased by about seven years if all deaths then occurring in infancy could have been prevented. The life-table for 1950–52 (page 97) shows, however, that there is still room for improvement; by abolishing the present risks of death in the first year, one and a half years could be added to the contemporary average life expectancy.

The reduction in infant mortality between 1841–50 and 1941–50 has taken place entirely within the last fifty years, as is shown by the following table :—

Decennium	Infant mortality rate	Per cent of rate in 1841–50
1841–50 .. ..	153	100
1851–60 .. ..	154	101
1861–70 .. ..	154	101
1871–80 .. ..	149	97
1881–90 .. ..	142	93
1891–1900 .. ..	153	100
1901–10 .. ..	128	84
1911–20 .. ..	100	65
1921–30 .. ..	72	47
1931–40 .. ..	59	39
1941–50 .. ..	43	28

It was pointed out in the 1950 Medical Text that while the *general* trend of infant mortality has been consistently downward since the turn of the century, over 90 per cent of the decline between 1906 and 1939 took place among infants who had already survived one week, the annual mortality rate in the *first* week of life remaining about the same from 1920 until during the Second World War. From 1928, when stillbirths were first registered, the stillbirth rate followed a similar pattern. In contrast, there was a marked decline in both rates between 1940 and 1944 and between 1947 and 1948, but the tendency since 1948, remarked on in the 1950 Text, for stillbirth and first week mortality rates to lag consistently behind those relating to the rest of the first year has continued. The size of the infant mortality rate in future years will increasingly depend on the trend of mortality in the first week, which accounted for 52 per cent of all infant deaths in 1951.



## The neonatal period—a historical note

It is now traditional among obstetricians, and the compilers of vital statistics, to distinguish the first four weeks of infancy, which is generally known as the "Neonatal Period." At the present time, when interest is chiefly centred on deaths within the *first* week of life, it is useful to recall the circumstances which led the Registrar General to distinguish the "neonatal" period from the rest of the first twelve months in his annual tabulations.

In the early years of the General Register Office, from 1839 to 1846, infant deaths under 1 month were distinguished in the tabulations along with five other age periods, viz. : 0– (under 1 month), 1–, 2–, 3–, 6–, 9– (9 months or over but under 12 months). The 2nd Annual Report stated that "in cases of death under 1 year of age the number of months, and often the number of days, is stated with precision." For these years mortality under 1 month per 1,000 live births can be derived for certain local areas of England and Wales and for certain causes. There is an interesting table in the 38th Annual Report (1875) which shows infant mortality per 1,000 live births in each month of age throughout the eight years 1839–46 for sixty-three "healthy districts" and for Liverpool—the worst district. The following is an extract :—

	Infant deaths per 1,000 live births		
	Sixty-three healthy districts 1839–46	Liverpool 1839–46	Per cent excess mortality in Liverpool
Under one month .. .. .	39·3	53·4	+ 36 per cent
Rest of first year of infancy ..	71·2	175·5	+146 ..
Under one year .. .. .	110·5	228·9	+107 per cent

But in 1847, and subsequently until 1906\*, the first two of these age periods, i.e., under 1 month, and 1–2 months, were amalgamated, so that the trend of mortality in the neonatal age period cannot be shown for a space of fifty-nine years.

Dr. Tatham pointed out in his "Letter to the Registrar General" for 1905 what is evident from the table on page 104 ; "although the fact that infants . . . perish as rapidly now as they did half a century ago . . . has been kept steadily before the public in the Registrar General's reports . . . it is only in recent times that public interest has been thoroughly awakened." Dr. Tatham was referring to steps taken about this time by the Medical Officer of the Local Government Board, following an official conference on the subject, "to procure periodically" special returns of infant mortality from Medical Officers of Health. The Registrar General decided that the annual tabulations should provide for a more "minute examination" of infant mortality by the General Register Office and the 1905 Statistical Review accordingly showed the number of infant deaths in each of the first four weeks after birth and in each successive month from the 1st to the 12th. In these tables (which have continued to the

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\* When a cause analysis was introduced for deaths from "Violence" in the 30th Annual Report (1867) the first year of life was split into "under one month" and "over one month." Deaths from "violence" in the neonatal period are, therefore, available from 1867 onwards and they are also available retrospectively from 1863 to 1866.

present time) the first four weeks were separately distinguished but their aggregate was titled “under 1 month.” In practice “under 1 month” appeared to mean the same as “under 4 weeks.” Indeed, one report contains two tables in which the identical total appears in the first under the title “deaths under 4 weeks” and in the other under the title “deaths under 1 month.” Infant mortality “under 1 month” was analysed by Social Class in 1911, and the title “under 1 month” continued in use until 1917. The 1916 report has stressed the difference between the trend of mortality in the *first* fortnight of life and the *second* fortnight (the trend for the latter following the pattern characteristic of the months after the first) and probably for this reason as much as for any other “Under 4 weeks” replaced “Under 1 month” in the table headings of the Annual Report for 1917 and subsequent years.

The phrase “neonatal” does not appear to have been used by the writers of the Annual Reviews to describe this particular age period prior to 1936, when it was defined (though not explicitly) in terms of the first 4 weeks of life.

### Definitions of the rates employed : problems of measurement

A simple definition of an Infant Mortality Rate is the number of deaths among liveborn infants at ages under 12 months registered in a given year per 1,000 live births registered during the same year.

The number of live births registered during the year does not, however, necessarily give the true infant population at risk, because there may be delay between the actual time of birth and the time when the birth is registered, and some of the infants dying in any year will have been born the previous year and should properly be related to live births occurring at that time. The Medical Text Volumes for 1940–45 (pages 27–29) and 1946–47 (pages 15–17) discuss an adjustment which takes both these factors into account. Infant mortality rates have been calculated per 1,000 “related live birth occurrences” regularly since those for 1941 ; the phrase is abbreviated in the table legends to “related live births.” The following table shows the infant mortality rates in terms of “registered” and in terms of “related” live births respectively for each of the last five years, and sets out the differences between them. The largest difference was in 1946, and amounted to 2·0 per 1,000. The difference in 1951 was almost negligible.

	1945	1946	1947	1948	1949	1950	1951
(a) Infant mortality per 1,000 “registered” live births	46·6	40·9	41·6	34·4	32·7	30·1	29·8
(b) Infant mortality per 1,000 “related” live births ..	46·0	42·9	41·4	33·9	32·4	29·6	29·7
Difference (b)–(a) .. ..	–0·6	+2·0	–0·2	–0·5	–0·3	–0·5	–0·1

The 1940–45 Medical Text shows how to compute “related” infant mortality rates by sex, legitimacy and quarters of the year, and for regional areas. The necessary data from which the infant mortality rates per 1,000 related live births during 1951 were calculated are given in Table 26 of Part I and Table YY of Part II of the Annual Review.



Deaths in any period of the first year of life (for example, during the first week, the first 4 weeks or from the fourth week to the end of the twelfth month) are traditionally expressed in terms of the total number of related live births rather than the number of survivors at the beginning of each period. Where the part of the year concerned does not start at birth, the quotient obtained by this procedure is not the probability of dying during that part of the year among those alive at its start (i.e. those who survived the earlier period). It was pointed out in the 1950 Text that the difference between a rate per 1,000 live births and one per 1,000 surviving live births tends to be negligible when the number of live births is large relative to the number of deaths, and the former rate may be used in place of the latter without appreciable error. The post-neonatal rate for 1951 per 1,000 live birth occurrences was 11·0. When those dying during the neonatal period are subtracted from the denominator, the rate per 1,000 remaining is 11·2.

The rates exhibited in the present series of tables all relate to the calendar year unless otherwise specified, and conform to the following definitions :

*Infant Mortality Rate*.—Deaths among liveborn infants at ages under 1 year per 1,000 related live births.

*Neonatal Mortality Rate*.—Deaths among liveborn infants under 4 weeks of age per 1,000 related live births.

(a) *Early Neonatal Mortality*.—Deaths among liveborn infants under 1 week of age per 1,000 related live births ;

(b) *Late Neonatal Mortality*.—Deaths among liveborn infants aged 1 week or over but under 4 weeks per 1,000 related live births.

*Post-neonatal Mortality Rate*.—Deaths among liveborn infants aged four weeks or over but under 1 year of age per 1,000 related live births. ("Post-neonatal" is preferred as the descriptive adjective for this age period because it is self-explanatory in relation to the well-established term "neonatal." The adjective "post-natal" is best employed in its literal meaning of "after birth," irrespective of the time period.)

*Stillbirth Rate (Late Foetal Mortality Rate)*.—Births at or over 28 weeks gestation which are not liveborn, per 1,000 births (live and still).

*Perinatal Mortality*.—This term has come into use in recent years and was used in the 1950 Text to describe a combination of stillbirths with early neonatal deaths (deaths under 1 week) per 1,000 total births ; it appears in several of the tables in the present Text with total births (live plus still) as the denominator. (Stillbirths combined with all neonatal deaths are also shown.)

### **Causes of deaths among infants in relation to age**

Table LV (page 118) gives mortality rates by sex and selected cause groups at various periods in the first year. Infant deaths are classified in greater detail of cause and age in Table 27 of Part I ; the majority of causes separately specified in the International Classification are shown, and a complete analysis by cause is provided in respect of congenital malformations and diseases of early infancy.

Certain causes of death are associated with particular age periods in the first year. In the present Text tables, underlying causes as given by the attending practitioners have been arranged in broad ætiological groupings according to whether they are primarily determined by factors operating before or at birth, or operating after birth. The title "Prenatal and Natal Causes" is given to

the former grouping, which includes congenital malformations as a sub-group, and to the latter grouping the title "Postnatal Causes." The "remaining causes" are those which for one reason or another do not readily fit into either of these two broad groupings.

The distribution by cause per 1,000 total infant deaths within each age group displayed in Table LIV (page 116) clearly shows that :—

- (a) Mortality in the Early Neonatal period, i.e. in the first week of life, is dominated by the conditions here designated as "Prenatal and Natal"; they account for 93 per cent of the deaths in the first week of life, "immaturity" being the most prominent condition among them.
- (b) Over 70 per cent of the causes of death in the post-neonatal period—from the fourth week to the end of the first year—are infections (accounting for at least 60 per cent) or accidents (less than 10 per cent) which the new-born encounter for the first time in the post-natal environment which surrounds them from birth onwards; the proportion of "Prenatal and Natal" causes in this series is under 20 per cent and the majority of these are congenital malformations.
- (c) The Late Neonatal Period occupies an intermediate position between the other two; broadly speaking just under two-thirds of the deaths therein are attributable to "Prenatal and Natal" causes (of which congenital malformations account for about half) and one third to "Post-natal" causes.

The *Early Neonatal Mortality Rate* is thus a convenient measure of infant mortality from Prenatal and Natal causes due to general factors in the maternal environment, past or present, as well as from specific "obstetrical" causes which are directly under the control of the obstetrician. On the other hand, the *Post-neonatal Mortality Rate* is an index of infant mortality from post-natal causes due to environmental factors in more immediate relationship to the infant, such as respiratory infection in members of the household, or unhygienic handling of his food.

Clearly, many infants whose deaths are attributed to "Post-natal" causes will be immature or malformed, or victims of birth injury or some other condition determined by prenatal or natal factors; such infants may be particularly prone to die from infection or accidents acquired after birth. It is nevertheless likely that these deaths might be reduced, or possibly prevented altogether, if the infection or accident responsible for the fatal illness could be avoided or successfully treated.

The form of stillbirth certificate used in England and Wales does not ask for the practitioner's opinion as to cause. This question has appeared on the Scottish form since 1938, and the Registrar General for Scotland regularly publishes an analysis of stillbirths by cause. From these and other reports and studies it appears that the causes of death in the early neonatal period are more closely allied with those which determine stillbirth than with those operating in the post-neonatal period, so that stillbirths and early neonatal deaths in combination—"perinatal" deaths—are therefore more representative of factors associated with the genotype, the mother, the maternal environment and the quality of obstetric care ("Prenatal and Natal" factors) than the stillbirth and early neonatal mortality rates considered separately.

### Immaturity

Table LV also shows a combined "immaturity" rate in respect of deaths from "certain diseases of early infancy" (rubrics 760–776) which is derived



from Table 27, Part I, mentioned above. This rate comprises all deaths classed to members of this group with mention of immaturity, in addition to deaths attributed to immaturity alone or with a cause other than the “ diseases of early infancy ” subsidiary to it (“ immaturity alone or primary,” etc.).

Coding for mention of immaturity is limited at present to certificates on which appear one or other of the causes listed in rubrics 760–776 of the International Classification. These rubrics contain 86 per cent of early neonatal deaths and 81 per cent of neonatal deaths ; congenital malformations, bronchitis and meningitis are the only important cause groups omitted which may often be associated with immaturity.

The following table shows the frequency with which practitioners mentioned immaturity in association with one or other of the causes in the group “ diseases of early infancy.” The proportions in 1951 in respect of each cause closely parallel those in 1950, but there is a 9 per cent rise in the proportion of deaths from “ other birth injury ” in which immaturity was mentioned, and smaller rises in respect of “ erythroblastosis ” and “ sepsis of newborn.” (It should be noted that certificates in which the underlying cause is given as antepartum maternal hæmorrhage are assigned to rubric 761, “ other birth injury ”.)

Int. classn. No.	Cause of death	Early Neonatal Period (under 1 week)		Neonatal Period (under 4 weeks)	
		Number of deaths	Per cent with immaturity	Number of deaths	Per cent with immaturity
760	Intracranial and spinal injury at birth .. .. .	1,400	32	1,518	31
761	Other birth injury (including maternal antepartum hg'e.) ..	387	49	397	49
762	Post-natal asphyxia and atelectasis .. .. .	2,195	55	2,364	54
763	Pneumonia of newborn .. .. .	380	37	946	33
764	Diarrhœa of newborn .. .. .	6	—	92	21
765–768	Sepsis of newborn .. .. .	14	21	55	24
769	Attributed to maternal toxæmia	240	86	255	87
770	Erythroblastosis .. .. .	438	17	483	18
771	Hæmorrhagic disease .. .. .	183	27	215	28
772	Nutritional maladjustment .. ..	2	50	3	33
773	Ill-defined diseases .. .. .	241	85	279	82
774, 776	Immaturity mentioned alone or with other cause subsidiary to it .. .. .	3,497	100	3,788	100
760–776	All deaths coded to section “ diseases of early infancy ”	8,983	67	10,395	64
All rubrics	All deaths in neonatal period ..	10,502	57	12,788	52

In all, 6,018 early neonatal deaths (57 per cent) and 6,684 neonatal deaths (52 per cent) had immaturity coded as a primary, subsidiary, or contributory cause. The number of registered neonatal deaths in which there is mention of immaturity is not strictly comparable with the number of neonatal deaths among notified births weighing 5½ lb. or less. Coding for “ immaturity ” according to the International Classification is not confined to birth weight alone but comprises *any* evidence of immaturity on the death certificate such

as mention of a gestation period of 37 weeks or less, mention of prematurity (immaturity), or mention of multiple birth.

### Seasonal variations in stillbirth and infant mortality

Table LVI (page 120) displays the rates in each quarter of the year for stillbirths, and for infant deaths by age and according to selected causes. The quarterly rates are also shown as percentages of the annual rates. Stillbirth and early neonatal mortality rates usually show the least seasonal variation ; the largest component of seasonal variation in the post-neonatal period is contributed by “ pneumonia and bronchitis.”

### Social class variations in stillbirth and infant mortality

Stillbirth and infant mortality rates for England and Wales by social class are not tabulated annually. The latest available figures are those for 1949 and 1950 (Table XXI, Medical Text for 1948–49, and the Decennial Supplement for 1951, Occupational Mortality, Part I). They show that infant mortality was about two and a half times as great in Social Class V (unskilled workers) as in Social Class I (professional workers) ; that the gradient was more marked at the later age periods of infancy than among stillbirths and neonatal deaths ; and that it was particularly marked in the North of England and in Wales.

### Comparisons between different areas in England and Wales

#### (a) Variations by age-period

Table LVII (page 122) shows stillbirth and infant mortality rates during 1951 in each of the standard regions and in the conurbations within the regions.

Among the standard regions it is usual to find Wales and the Northern and North Western regions with the worst rates at almost every age-period, while the London and South Eastern region returns the most favourable experience. The regional differences are greater in the later periods of infancy. The following table shows the variation of each rate in each of the standard regions during 1951 from the corresponding rate for England and Wales as a whole:—

Region Groups and Standard Regions	Per cent excess over rate for England and Wales			
	Stillbirth rate	Early Neonatal rate	Late Neonatal rate	Post-neonatal rate
<b>Wales.. .. .</b>	+ 15	+ 12	+ 33	+ 31
<b>North of England .. ..</b>	+ 8	+ 8	+ 12	+ 27
Northern .. .. .	+ 7	+ 15	+ 15	+ 42
East and West Ridings .. ..	+ 5	+ 2	0	+ 27
North Western .. .. .	+ 10	+ 10	+ 18	+ 19
<b>Midlands and East .. ..</b>	+ 0·4	— 3	+ 3	— 4
North Midland .. .. .	+ 0·4	— 7	— 3	+ 2
Midland .. .. .	+ 4	+ 6	+ 15	+ 4
Eastern .. .. .	— 5	— 10	— 15	— 21
<b>South of England .. ..</b>	— 9	— 9	— 15	— 28
London and South Eastern ..	— 10	— 9	— 21	— 32
Southern .. .. .	— 16	— 12	0	— 24
South Western .. .. .	— 3	— 3	— 3	— 24



The standard regions in England can be amalgamated into three large groups, as in the table above, so as to form population areas sufficiently large for a detailed analysis by age and cause covering only one year's experience. These groups represent a broad threefold division of England ; on many occasions it is desirable to compare, for example, Scotland and Northern Ireland with the North of England rather than with England and Wales as a whole or with any one of the smaller standard regions.

Table LVIII (page 124) shows the stillbirth and infant mortality rates within England and Wales, Wales and each of the three groups formed from the standard regions in England for aggregates of urban districts by population density and for aggregates of rural districts. There are considerable variations in the regional rates within the same population density grouping. The extent of these variations in the density rates is summarized in the following table :—

Population Density Aggregates within Standard Region Groups	Per cent excess over corresponding population density rate for England and Wales			
	Stillbirth rate	Early Neonatal rate	Late Neonatal rate	Post- neonatal rate
<b>Conurbations :</b>				
North of England .. .. .	+ 8	+ 8	+ 19	+ 34
Midlands and East .. .. .	+ 2	+ 5	+ 3	+ 7
South of England .. .. .	— 9	— 8	— 22	— 32
<b>Other urban areas with popula- tions of 100,000 and over :</b>				
Wales .. .. .	+ 16	+ 13	— 21	+ 18
North of England .. .. .	+ 6	+ 9	0	+ 22
Midlands and East .. .. .	— 3	— 2	+ 8	— 14
South of England .. .. .	— 11	— 16	— 5	— 17
<b>Urban areas with populations of 50,000–100,000 :</b>				
Wales .. .. .	+ 38	+ 36	— 69	+ 74
North of England .. .. .	+ 9	+ 6	+ 19	+ 34
Midlands and East .. .. .	— 2	— 5	0	— 11
South of England .. .. .	— 11	— 5	— 22	— 31
<b>Urban areas with populations of under 50,000 :</b>				
Wales .. .. .	+ 3	+ 12	+ 44	+ 23
North of England .. .. .	+ 7	+ 4	0	+ 15
Midlands and East .. .. .	+ 2	— 7	— 18	— 1
South of England .. .. .	— 10	— 3	— 3	— 25
<b>Rural areas :</b>				
Wales .. .. .	+ 23	+ 7	+ 43	+ 50
North of England .. .. .	+ 9	+ 19	+ 11	+ 22
Midlands and East .. .. .	— 2	— 3	— 3	— 5
South of England .. .. .	— 9	— 10	— 17	— 22

The numbers of live births, stillbirths, neonatal deaths and infant deaths, together with the infant mortality rate, are given in Table 12, Part I for each county, county borough, urban district, and rural district throughout England and Wales. Local authorities can compare their rates not only with those of England and Wales but with the average experience in their own region or region-group, or in the appropriate population density aggregate within the region-group.

### (b) Variations by cause of death

Table LIX (page 126) gives infant mortality by cause (including an overall immaturity rate) for Wales and three standard region groups in England ; the regional rates are also shown as percentages of the national average. The percentages by which the 1951 infant mortality rates for each of the broad cause groupings in the four standard region groups differed from those experienced by England and Wales as a whole were as follows :—

	England and Wales rates	Per cent excess over rates for England and Wales			
		Wales	North of England	Midlands and East	South of England
<b>Infant Mortality (All Causes) ..</b>	<b>29.7</b>	<b>+ 22</b>	<b>+ 16</b>	<b>— 2</b>	<b>— 17</b>
Congenital malformations .. ..	4.2	+ 24	+ 5	0	— 10
Other prenatal and natal causes	14.1	+ 15	+ 10	— 3	— 11
Post-natal causes .. .. .	9.9	+ 23	+ 29	— 2	— 28
Unclassified (remaining causes) ..	1.5	+ 60	+ 7	— 7	— 20
Immaturity, or with mention of immaturity .. .. .	10.1	+ 18	+ 10	— 4	— 12
Immaturity alone, or primary to dis. other than of early infancy	5.7	+ 26	+ 16	— 5	— 16
Immaturity associated with diseases of early infancy ..	4.4	+ 7	+ 2	— 2	— 7

The rate for immaturity alone or primary etc., was highest in Wales and the North of England and lowest in the South of England, while the rate for immaturity associated with “ diseases of early infancy ” (rubrics 760–773), though still keeping the same general trend, showed a more uniform distribution. The coding convention enjoined at present by the International Classification insists that, whenever immaturity and one of the other “ diseases of early infancy ” are mentioned together on the death certificate, the latter shall be coded as the primary cause even if the certifying practitioner entered “ immaturity ” as the underlying cause. This is an important exception to the general rule that selection from two or more causes entered on a certificate is in accordance with the practitioner’s own indication as to which was the underlying cause. The following table confirms the suggestion made in the 1950 Text that certifying practitioners in the South and Midlands of England may more often mention one or other of the specific diseases of early infancy along with immaturity on the certificate, whereas a greater number of practitioners in the North of England and in Wales—perhaps because post-mortems are less frequently held—write immaturity alone.



	England and Wales	Wales	North of England	Midlands and East	South of England
(a) Immaturity or with mention of immaturity (per 1,000 live births) .. .. .	10.1	11.9	11.1	9.7	8.9
(b) Immaturity alone or primary to diseases other than of early infancy (per 1,000 live births)	5.7	7.2	6.6	5.4	4.8
(b) as percentage of (a) .. .. .	56	61	59	56	54

There may also be a tendency among practitioners to avoid putting "immaturity" as the underlying cause of death where a definite explanation can be given in terms of infant pathology, e.g. atelectasis, intracranial hæmorrhage. When there is a post-mortem on an immature infant dying in hospital, the certifying practitioner may therefore prefer to assign the principal pathological finding as the underlying cause which led directly to death and put immaturity as a subsidiary or contributory condition. An increase in the post-mortem rate on immature infants, together with the rules for assignment already mentioned, would tend to bring about an artificial decline in the rate for "immaturity alone." This would be compensated in large measure, however, by a parallel rise in the "associated immaturity" rate.

Compared with 1950, the death rate in England and Wales from "immaturity alone or primary to diseases other than of early infancy" has gone down but the rate from "immaturity associated with diseases of early infancy" has increased.

	Immaturity associated with diseases of early infancy		Immaturity alone or primary to diseases other than of early infancy	
	Rate in 1951	Per cent of 1950	Rate in 1951	Per cent of 1950
England and Wales	4.4	93	5.7	105
Wales .. .. .	4.7	85	7.2	104
North of England .. .. .	4.5	96	6.6	106
Midlands and East .. .. .	4.3	98	5.4	106
South of England .. .. .	4.1	90	4.8	102

## Secular trend of stillbirth and infant mortality

### (a) Trend at different age-periods in England and Wales

Table LX (page 128) shows the trend of infant mortality and early neonatal, late neonatal and post-neonatal mortality since 1906, and the trend of stillbirths (late foetal mortality) since 1928. The annual rates at different ages in the post-neonatal period are also shown.

Late foetal deaths (stillbirths) and early neonatal deaths have been combined to form the numerator for a rate measuring perinatal mortality, which is given in terms of total births, i.e. live plus still, for each year since 1928, along with other rates based on total births.

The differential trends exhibited by the rates for the selected age-periods have already been mentioned (page 110). The trend of early neonatal mortality has followed on the whole a course parallel to the trend of stillbirths, whereas the trend of mortality in the late neonatal period has shown greater affinity with the post-neonatal trend than with the early neonatal trend. Table LIV (page 116) suggests why this should be the case : about 4 per cent of the deaths in the first week are primarily due to infections of all kinds, but 35 per cent of deaths in the late neonatal period are so attributed.

The following table demonstrates the differential trends. Stillbirth, early neonatal, late neonatal and post-neonatal death rates from 1940 onwards are displayed as percentages of the averaged rates for each group in the years 1936–39.

	Averaged annual rates 1936-39	Annual rates per cent of average for 1936-39											
		1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Stillbirth rate (late foetal mortality) .. ..	38·8	96	90	86	78	71	71	70	62	60	59	58	59
Early neonatal mortality	21·6	99	96	91	85	81	83	82	76	72	72	70	72
Late neonatal mortality..	7·6	109	109	101	91	91	89	88	82	54	49	43	43
Post-neonatal mortality ..	25·8	105	121	91	93	82	83	71	72	55	50	43	42

The stillbirth (late foetal death) rate expressed as a percentage of the averaged rates for 1936–39 has declined between 1948 and 1951 by only 1 per cent, while the early neonatal rate has remained unchanged. In contrast to this, late neonatal mortality has declined over the same period by 11 per cent and post-neonatal mortality by 13 per cent.

This lag in “perinatal” mortality was also evident between 1944 and 1946, and the reasons for its appearance are not immediately obvious. It is known that maternal age and parity (number of previous children) significantly influence the likelihood of stillbirth (late foetal death) (Civil Text, 1940–45, pages 129–132) and they may also be important influences in the early neonatal period. The 1946–50 Civil Text (pages 143–145) shows, however, that standardization of the stillbirth (late foetal death) rates over the period 1939–51 for age and parity in terms of the 1939 rates does not materially alter the shape of the trend.

**(b) Trend at different age-periods in the standard regions**

Table LXII (page 130) displays the stillbirth rate (late foetal death rate), the neonatal death rate, and the post-neonatal death rate in each of the years 1947 to 1951. The rates are shown as percentages of the 1947 rates to indicate the relative rates of decline.

A space of five years is not long enough to demonstrate significant differences between regional trends but the table makes it evident that the lag in stillbirth rates and neonatal mortality during 1950 and 1951 is a feature common to most of the regions.





Table LIV.—Principal Causes of Death Under One Year, arranged in ætiological groups: (a) Age-group distribution per cent of all deaths assigned to each cause ; (b) Cause distribution per 1,000 total deaths in each age-group. England and Wales, 1951

Ætiological Group	Cause of Death (and International Classification numbers)	Number of infant deaths (under 1 year)	Age distribution per cent of total infant deaths assigned to each cause				Cause distribution per 1,000 total infant deaths in each age-group			
			Infant mortality (under 1 year)	Neonatal mortality			Infant mortality (under 1 year)	Neonatal mortality		
				(Under 4 weeks)	Early (under 1 week)	Late (1 week and under 4 weeks)		Under 4 weeks	Early (under 1 week)	Late (1 week and under 4 weeks)
ALL CAUSES	All causes .. .. .	20,223	100	63	52	11	1,000	1,000	1,000	1,000
	Congenital malformations (750-759) ..	2,864	100	63	41	22	142	113	278	141
	Total causes mainly of prenatal and natal origin other than congenital mal- formations .. .. .	9,595	100	97	89	8	474	817	314	40
Prenatal and Natal Group (including congenital malforma- tions)	Immaturity alone, or primary to diseases other than of early infancy (774, 776)	3,886	100	97	90	7	191	295	333	126
	Attributed to maternal toxæmia (769) ..	257	100	99	93	6	13	20	23	7
	Ill-defined diseases of early infancy (773)	332	100	84	73	11	16	22	23	17
	Postnatal asphyxia and atelectasis (762).	2,441	100	97	90	7	121	185	209	74
	Intracranial and spinal injury at birth (760) .. .. .	1,556	100	98	90	8	77	119	133	52
	Other birth injury (including maternal antepartum hæmorrhage) (761) ..	397	100	100	97	3	20	31	37	4
	Erythroblastosis (770) .. .. .	505	100	96	87	9	25	38	42	20
	Hæmorrhagic disease of newborn (771)..	221	100	97	83	14	11	17	17	14
	Total causes mainly of postnatal origin ..	6,777	100	21	9	12	335	112	55	370
	Gastro-enteritis (including diarrhoea of newborn) (571, 764) .. .. .	831	100	11	1	10	41	7	1	38
	Pneumonia and bronchitis (490-493, 763: 500-502) .. .. .	3,924	100	25	10	15	196	77	37	259
										396



Postnatal Group	Causes classified as infective (001-138): others mainly infective in origin* ..	1,254	100	13	3	10	87	62	13	4	54	146
	Whooping cough; measles (056, 085)..	371	100	1	—	1	99	18	0	—	1	49
	Acute upper respiratory infections and influenza (470-475; 480-483) ..	211	100	9	1	8	91	10	2	0	7	26
	Otitis media and mastoiditis; empyema; pleurisy (391-393; 518, 519)..	133	100	11	2	9	89	7	1	0	5	16
	Septicæmia; skin and subcutaneous tis- sue infections; sepsis of newborn (053, 690-698, 765-768) ..	108	100	63	14	49	37	5	5	2	23	5
	Tuberculosis other than tuberculous meningitis (001-008; 011-019) ..	43	100	2	2	—	98	2	0	0	—	6
	Tuberculous meningitis (010) ..	56	100	—	—	—	100	3	—	—	—	8
	Meningococcal infections and non- meningococcal meningitis (057; 340)	250	100	18	5	13	82	12	4	1	14	28
	Causes classified as infective not specified above (remainder 001-138) ..	82	100	18	10	8	82	4	1	1	3	9
	Accidental mechanical suffocation from vomit, food, foreign body, or in cot (E921-E925) ..	576	100	11	4	7	89	28	5	2	18	69
	Lack of care; neglect (including found- lings); infanticide (E926; E980-E985).	127	100	91	89	2	9	6	9	11	1	1
	Other accidental causes (remainder E800- E999) ..	65	100	11	8	3	89	3	1	0	1	8
	Total causes remaining ..	987	100	25	16	9	75	49	19	15	38	99
UNCLASSIFIED	Neoplasms (140-239) ..	83	100	22	19	3	78	4	1	2	1	9
	Other remaining causes ..	904	100	25	16	9	75	45	18	13	37	90

\* 340, 391-393, 470-483, 518, 519, 690-698, 765-768.

Table LV.—Principal Causes of Death Under One Year and in the Neonatal, Post-neonatal and other Age Periods,  
by Sex, per 1,000 related live births. England and Wales, 1951

Ætiological Group	Cause of Death (and International Classification numbers)	Total Infant mortality (under 1 year)	Infant Mortality per 1,000 related live births at various ages								
			Neonatal mortality (under 4 weeks)	Early neonatal mortality (under 1 week)	Late neonatal mortality (1 week and under 4 weeks)	Post-neo-natal mor- tality (4 weeks and under 1 year)	Early neonatal period		Post-neonatal period		
							Under 1 day	1 day and under 1 week	4 weeks and under 3 months	3 months and under 6 months	6 months and under 1 year
ALL CAUSES	All Causes .. .. .	33·56 25·53	21·60 15·91	17·96 12·83	3·64 3·08	11·96 9·62	8·51 6·44	9·45 6·39	4·68 3·42	3·85 3·30	3·43 2·90
	Congenital malformations (750-759) .. .. .	4·38 4·02	2·74 2·61	1·82 1·66	0·93 0·94	1·64 1·41	0·60 0·68	1·22 0·98	0·87 0·60	0·41 0·46	0·36 0·35
	Total causes mainly of prenatal and natal origin other than congenital malformations	16·49 11·64	16·00 11·26	14·82 10·33	1·18 0·93	0·49 0·38	7·52 5·51	7·30 4·82	0·36 0·29	0·08 0·06	0·05 0·03
Prenatal and Natal Group (including congenital malforma- tions)	Immaturity alone, or primary to diseases other than of early infancy (774, 776) .. .. .	6·45 4·90	6·30 4·76	5·90 4·36	0·40 0·42	0·15 0·14	3·36 2·40	2·54 1·96	0·13 0·14	0·01 0·00	0·01 —
	Attributed to maternal toxæmia (769) .. .. .	0·38 0·37	0·38 0·37	0·36 0·35	0·02 0·03	0·00 0·00	0·20 0·18	0·15 0·17	0·00 0·00	— —	— —
	Ill-defined diseases of early infancy (773) .. .. .	0·60 0·38	0·50 0·32	0·42 0·29	0·08 0·03	0·10 0·06	0·21 0·17	0·20 0·12	0·08 0·05	0·02 0·00	0·00 0·01
	Postnatal asphyxia and atelectasis (762) .. .. .	4·14 2·98	4·03 2·88	3·78 2·66	0·26 0·23	0·11 0·10	1·93 1·45	1·85 1·21	0·07 0·05	0·03 0·04	0·01 0·01
	Intracranial and spinal injury at birth (760) .. .. .	2·95 1·58	2·89 1·55	2·68 1·41	0·21 0·14	0·06 0·03	1·10 0·64	1·58 0·76	0·04 0·03	0·01 0·00	0·01 0·00
	Other birth injury (including maternal ante-partum hæmorrhage) (761) .. .. .	0·63 0·53	0·63 0·53	0·61 0·52	0·02 0·01	— —	0·45 0·43	0·17 0·10	— —	— —	— —
	Erythroblastosis (770) .. .. .	0·91 0·56	0·87 0·53	0·80 0·48	0·08 0·05	0·04 0·03	0·23 0·18	0·57 0·30	0·02 0·01	0·01 0·01	0·01 0·01
	Hæmorrhagic disease of newborn (771) .. .. .	0·35 0·29	0·34 0·29	0·28 0·26	0·06 0·03	0·01 0·00	0·04 0·06	0·23 0·20	0·01 0·00	0·00 —	— —



	Total causes mainly of postnatal origin .. { M. F.	11.02 8.70	2.41 1.77	1.04 0.65	1.37 1.12	8.61 6.93	0.26 0.18	0.78 0.47	3.09 2.28	3.01 2.51	2.51 2.14
Postnatal Group	Gastro-enteritis (including diarrhoea of new-born) (571, 764) .. .. . { M. F.	1.42 1.00	0.16 0.11	0.01 0.01	0.15 0.10	1.26 0.89	— 0.00	0.01 0.00	0.48 0.33	0.41 0.35	0.37 0.21
	Pneumonia and bronchitis (490-493, 763:500-502) .. .. . { M. F.	6.37 5.10	1.69 1.19	0.72 0.42	0.96 0.76	4.68 3.91	0.05 0.03	0.67 0.39	1.82 1.35	1.66 1.46	1.20 1.10
	Causes classified as infective (001-138) : others mainly infective in origin' .. .. . { M. F.	1.96 1.68	0.23 0.26	0.06 0.06	0.17 0.20	1.73 1.42	0.01 0.01	0.05 0.05	0.45 0.35	0.49 0.38	0.79 0.69
	Accidental mechanical suffocation from vomit, food, foreign body, or in cot (E921-E925) .. { M. F.	0.95 0.74	0.12 0.08	0.03 0.02	0.07 0.06	0.83 0.66	0.00 0.01	0.04 0.02	0.33 0.24	0.40 0.31	0.10 0.11
	Lack of care ; neglect (including foundlings) ; infanticide (E926, E980-E985) .. .. . { M. F.	0.23 0.13	0.21 0.13	0.20 0.13	0.01 —	0.02 0.00	0.19 0.12	0.01 0.01	0.00 0.00	0.01 0.00	0.01 —
	Other accidental causes (remainder E800- E999) .. .. . { M. F.	0.11 0.07	0.01 0.01	0.01 0.01	0.00 0.00	0.10 0.06	0.01 0.01	— —	0.02 0.02	0.04 0.01	0.04 0.03
	Total causes remaining .. .. . { M. F.	1.69 1.18	0.45 0.28	0.28 0.19	0.17 0.09	1.24 0.90	0.13 0.08	0.14 0.12	0.37 0.25	0.35 0.26	0.52 0.39
	Immaturity, or with mention of Immaturity (774, 776; 760-5-773.5) .. .. . { M. F.	10.08	9.85	8.86	0.99	0.23	4.62	4.25	0.21	0.01	0.01
	Immaturity alone, or primary to disease other than of early infancy (774, 776) .. .. . { M. F.	5.72	5.58	5.15	0.43	0.14	2.89	2.26	0.13	0.01	0.00
	Immaturity associated with diseases of early infancy (760-5- 773.5) .. .. . { M. F.	4.35	4.27	3.71	0.56	0.08	1.72	1.99	0.07	0.01	0.00
	All other causes (760-0-773.0 and remainder) .. .. . { M. F.	19.59	8.99	6.61	2.38	10.60	2.89	3.72	3.86	3.57	3.17

\* 340, 391-393, 470-483, 518, 519, 690-698, 765-768.

Table LVI.—Stillbirths per 1,000 Total Births, Infant Deaths and Deaths in the Early Neonatal, Late Neonatal and Post-neonatal Periods per 1,000 Related Live Births, and Death Rates from the Principal Causes of Infant Mortality ; Comparisons of Annual and Quarterly Rates. England and Wales, 1951

Ætiological Group	Cause of Death (and International Classification numbers)	Annual Rates (per 1,000 related live births)	Quarterly Rates (per 1,000 live birth occurrences)*				Quarterly Rates per cent of Annual Rates			
			Jan. to March	April to June	July to Sept.	Oct. to Dec.	Jan. to March	April to June	July to Sept.	Oct. to Dec.
Stillbirths (Late Foetal Deaths, at or over 28 weeks gestation)	.. .. .	23·0	24·0	22·3	22·1	24·0	104	97	96	104
Early Neonatal Deaths (infant deaths at ages under 1 week)	.. .. .	15·5	16·5	15·4	14·0	16·2	106	99	90	105
Late Neonatal Deaths (infant deaths at ages 1 week and under 4 weeks)	.. .. .	3·3	4·4	3·1	2·9	3·1	133	94	88	94
Post-neonatal Deaths (infant deaths at ages 4 weeks and under 1 year)	.. .. .	10·9	16·9	9·4	7·0	10·4	156	87	65	96
Infant Deaths (total under 1 year)	.. .. .	29·7	37·2	27·7	23·8	30·0	125	93	80	101
Prenatal and Natal Group (including congenital malformations)	Congenital malformations (750-759)	4·2	4·3	4·0	3·9	4·7	102	95	93	112
	Total causes mainly of prenatal and natal origin other than congenital malformations..	14·1	15·5	13·8	12·8	14·6	110	98	91	104
	Immaturity alone, or primary to diseases other than of early infancy (774, 776)	5·7	6·3	5·5	5·2	5·9	111	96	91	104
	Attributed to maternal toxæmia (769)	0·4	0·4	0·3	0·4	0·4	—	—	—	—
	Ill-defined diseases of early infancy (773)	0·5	0·7	0·4	0·4	0·4	—	—	—	—
	Postnatal asphyxia and atelectasis (762)	3·6	4·0	3·5	3·2	3·7	111	97	89	103
	Intracranial and spinal injury at birth (760)	2·3	2·3	2·4	2·0	2·5	100	104	87	109
	Other birth injury (including maternal antepartum hæmorrhage) (761)	0·6	0·6	0·5	0·6	0·7	100	83	100	117
	Erythroblastosis (770)	0·7	0·8	0·9	0·6	0·7	114	129	86	100
	Hæmorrhagic disease of newborn (771)	0·3	0·4	0·3	0·3	0·3	—	—	—	—



Postnatal Group	Total causes mainly of postnatal origin .. .. .										60	100
	Gastro-enteritis (including diarrhoea of newborn) (571, 764) ..	1-2	1-6	1-1	0-9	1-3	133	92	75	108		
	Pneumonia and bronchitis (490-493, 763; 500-502) .. ..	5-7	9-5	4-7	3-2	5-7	167	82	56	100		
	Causes classified as infective (001-138); others mainly infective in origin (340; 391-393; 470-483; 518, 519; 690-698; 765-768)	1-8	3-2	1-6	1-0	1-6	178	89	56	89		
	Accidental mechanical suffocation from vomit, food, foreign body, or in cot (E921-E925) .. .. .	0-9	1-1	0-8	0-5	1-0	122	89	56	111		
	Lack of care; neglect (including foundlings); infanticide (E926; E980-E985) .. .. .	0-2	0-2	0-2	0-2	0-2	—	—	—	—		
	Other accidental causes (remainder E800-E999) .. ..	0-1	0-1	0-0	0-1	0-1	—	—	—	—		
	Total causes remaining .. .. .	1-5	1-6	1-5	1-2	0-8	107	100	80	53		
	Immaturity, or with mention of immaturity (774; 776; 760-5-773-5) .. ..	10-1	11-4	9-4	9-4	10-3	113	93	93	102		
	Immaturity alone, or primary to diseases other than of early infancy (744, 776) ..	5-7	6-3	5-5	5-2	5-9	111	96	91	104		
Immaturity associated with diseases of early infancy (760-5-773-5) .. ..	4-4	5-0	3-9	4-1	4-4	114	89	93	100			
All other causes (760-0-773-0 and remainder) .. .. .	19-6	25-9	18-3	14-4	19-7	132	93	73	101			

\* Stillbirths rates are per 1,000 total births. Infant mortality rates from all causes are per 1,000 related live births.

Table LVII.—Infant Mortality per 1,000 Related Live Births, and combined Stillbirth and Infant Death Rates per 1,000 Total Births, according to Age. England and Wales, Standard Regions and Conurbations, 1951

Standard Regions and Conurbations within the standard regions	Total infant mortality (under 1 year)	Infant mortality per 1,000 related live births at various ages										Stillbirths and infant deaths. Rates per 1,000 total births			
		Neo-natal mortality (under 4 weeks)	Early neonatal mortality (under 1 week)	Late neonatal mortality (1 week and under 4 weeks)	Post-neonatal mortality (4 weeks and under 1 year)	Early neonatal period		Post-neonatal period			Stillbirths plus infant deaths under 1 year	Stillbirths (late fetal deaths at or over 28 weeks gestation)	Stillbirths plus infant deaths under 1 week	Infant deaths at 1 week and over	Stillbirths plus infant deaths under 4 weeks
						Under 1 day	1 day and under 1 week	4 weeks and under 3 months	3 months and under 6 months	6 months and under 1 year					
ENGLAND AND WALES	29.7	18.8	15.5	3.3	10.9	7.5	8.0	4.1	3.6	3.2	52.2	23.0	38.2	14.0	41.5
Standard Regions:															
NORTH OF ENGLAND															
Northern	37.1	21.6	17.8	3.8	15.5	8.3	9.5	5.5	5.4	4.5	61.0	24.6	41.9	19.0	45.7
East and West Ridings	32.9	19.1	15.8	3.3	13.8	7.3	8.5	4.9	4.8	4.1	56.6	24.2	39.7	16.9	42.9
North Western	33.9	20.9	17.0	3.9	13.0	8.5	8.5	5.0	4.2	3.6	58.5	25.2	41.8	16.7	45.7
MIDLANDS AND EAST															
North Midland	28.7	17.6	14.4	3.2	11.1	7.1	7.3	3.9	3.8	3.4	51.3	23.1	37.1	14.2	40.4
Midland	31.6	20.3	16.5	3.8	11.3	8.3	8.2	4.3	3.7	3.3	55.0	23.9	40.0	14.9	43.7
Eastern	25.4	16.8	14.0	2.8	8.6	6.8	7.2	3.1	3.0	2.3	46.9	21.9	35.6	11.2	38.4
SOUTH OF ENGLAND															
London and South Eastern	24.1	16.7	14.1	2.6	7.4	7.0	7.0	2.9	2.3	2.2	44.6	20.8	34.6	10.0	37.2
Southern	25.2	16.9	13.6	3.3	8.3	6.4	7.2	3.1	2.6	2.5	44.3	19.4	32.8	11.5	36.1
South Western	26.5	18.2	15.0	3.2	8.3	6.6	8.4	3.2	2.7	2.5	48.4	22.3	37.0	11.4	40.1
WALES															
South Wales	36.1	21.8	17.4	4.4	14.3	8.4	9.0	5.6	4.8	4.0	61.9	26.4	43.4	18.5	47.7
North Wales	35.8	22.2	18.3	3.9	13.6	8.7	9.6	4.9	4.7	3.9	61.8	26.8	44.7	17.1	48.4
	37.2	20.8	14.8	6.0	16.4	7.4	7.4	7.1	4.8	4.4	62.0	25.5	39.9	22.0	45.8
Conurbations within Standard Regions:															
Tyneside conurbation	38.0	22.0	18.3	3.7	16.0	9.2	9.1	5.1	6.4	4.7	61.8	24.4	42.3	19.5	45.8
Rest of Northern region	36.7	21.5	17.6	3.9	15.2	7.9	9.6	5.6	5.0	4.5	60.7	24.7	41.8	18.9	45.7
West Yorkshire conurbation	32.6	18.3	15.1	3.2	14.3	7.4	7.7	5.2	4.9	4.2	55.0	22.9	37.7	17.3	40.8
Rest of East and West Ridings region	33.1	19.7	16.2	3.5	13.4	7.2	9.1	4.7	4.7	4.1	57.7	25.2	41.0	16.6	44.4
S.E. Lancashire conurbation	34.0	20.9	16.7	4.2	13.1	8.3	8.4	5.5	3.8	3.9	58.2	24.8	41.1	17.1	45.2
Merseyside conurbation	35.4	21.0	17.1	3.9	14.4	8.6	8.5	5.5	5.0	3.8	59.5	24.8	41.5	18.0	45.4
Rest of North Western region	32.8	20.9	17.2	3.7	11.9	8.5	8.7	4.2	4.2	3.4	58.1	25.9	42.7	15.3	46.3
West Midland conurbation	30.6	19.4	16.1	3.3	11.2	8.2	7.9	4.1	3.5	3.7	53.1	23.0	38.8	14.3	42.0
Rest of Midland region	32.7	21.2	16.9	4.3	11.5	8.5	8.4	4.5	4.0	3.0	56.9	24.8	41.3	15.6	45.5
Greater London conurbation	23.7	16.6	14.1	2.5	7.1	7.0	7.1	2.7	2.2	2.1	44.1	20.7	34.5	9.5	37.1
Rest of South Eastern region	25.6	16.8	14.0	2.8	8.8	7.1	6.9	3.7	2.5	2.6	46.2	21.0	34.8	11.4	37.6





Table LVIII.—Infant Mortality per 1,000 Related Live Births, and combined Stillbirth and Infant Death Rates per 1,000 Total Births, according to Age. England and Wales, and Population Density Aggregates within Regional Groups, 1951

Regional-groups and Population Density Aggregates	Total infant mortality (under 1 year)	Infant mortality per 1,000 related live births at various ages						Stillbirths and infant deaths. Rates per 1,000 total births							
		Neo-natal mortality (under 4 weeks)	Early neo-natal mortality (under 1 week)	Late neo-natal mortality (1 week and under 4 weeks)	Post neo-natal mortality (4 weeks and under 1 year)	Early neonatal period		Post neonatal period			Stillbirths plus infant deaths under 1 year	Stillbirths (late fetal deaths, at or over 28 weeks gestation)	Stillbirths plus infant deaths under 1 week	Infant deaths at 1 week and over	Stillbirths plus infant deaths under 4 weeks
						Under 1 day	1 day and under 1 week	4 weeks and under 3 months	3 months and under 6 months	6 months and under 1 year					
ENGLAND AND WALES .. ..	29·7	18·8	15·5	3·3	10·9	7·5	8·0	4·1	3·6	3·2	52·2	23·0	38·2	14·0	41·5
Conurbations .. ..	29·0	18·5	15·4	3·2	10·5	7·7	7·7	4·0	3·4	3·1	51·0	22·5	37·5	13·5	40·6
Other urban areas : with populations of 100,000 and over ..	31·6	19·7	15·8	3·9	12·0	7·6	8·1	4·4	3·8	3·7	54·8	23·7	39·1	15·6	42·9
with populations of 50,000 to 100,000 ..	30·0	18·6	15·5	3·2	11·4	6·7	8·7	4·4	3·6	3·4	53·5	24·0	39·1	14·4	42·2
with populations of under 50,000 ..	30·3	19·3	15·9	3·4	11·0	7·6	8·3	4·1	3·8	3·1	53·7	24·0	39·5	14·2	42·8
Rural areas .. ..	28·8	18·5	15·0	3·5	10·3	7·3	7·7	3·8	3·5	3·0	50·7	22·3	37·0	13·6	40·5
NORTH OF ENGLAND .. .. (Northern, E. and W. Ridings, N. Western)	34·4	20·6	16·8	3·7	13·8	8·1	8·8	5·1	4·7	4·0	58·5	24·8	41·2	17·3	44·9
Conurbations (Tyneside, W. Yorks., S.E. Lancs., Merseyside) .. ..	34·6	20·4	16·6	3·8	14·1	8·3	8·3	5·4	4·8	4·0	58·2	24·3	40·5	17·7	44·2
Other urban areas : with populations of 100,000 and over ..	35·8	21·2	17·3	3·9	14·6	8·1	9·2	5·2	4·5	4·9	60·2	25·1	42·0	18·3	45·8
with populations of 50,000 to 100,000 ..	35·5	20·2	16·4	3·8	15·3	7·0	9·4	6·1	4·7	4·5	61·0	26·2	42·3	18·8	46·0
with populations of under 50,000 ..	32·7	20·0	16·6	3·4	12·7	7·8	8·8	4·3	4·9	3·4	57·6	25·6	41·7	15·9	45·1
Rural areas .. ..	34·3	21·7	17·9	3·9	12·6	8·4	9·5	4·6	4·2	3·8	57·9	24·2	41·7	16·2	45·5





Table LIX.—Principal Causes of Death Under One Year ; Death Rates per 1,000 Related Live Births in England and Wales and Four Regional Groups, 1951, showing the Regional rates as Percentages of corresponding National rates

Ætiological Group	Cause of Death (and International Classification numbers)	Infant Mortality Rates per 1,000 related live births						Regional Rates per cent of England and Wales rate				
		England and Wales			South of England			England and Wales				
		England and Wales	North of England	Midland and East	South of England	Wales	England and Wales	North of England	Midland and East	South of England	Wales	England and Wales
ALL CAUSES	ALL Causes .. .. .	29.7	34.4	29.0	24.7	36.1	100	116	98	83	122	100
	Congenital malformations (750-759) .. .. .	4.2	4.4	4.2	3.8	5.2	100	105	100	90	124	100
	Total causes mainly of prenatal and natal origin .. .. .	14.1	15.5	13.7	12.6	16.2	100	110	97	89	115	100
	Other causes .. .. .	15.5	18.9	15.3	14.9	20.3	100	122	103	95	141	100
Prenatal and Natal Group (including congenital malformations)	Immaturity alone, or primary to diseases other than of early infancy (774, 776) .. .. .	5.7	6.6	5.4	4.8	7.2	100	116	95	84	126	100
	Attributed to maternal toxæmia (769) .. .. .	0.4	0.3	0.4	0.4	0.4	100	75	100	100	100	100
	Ill-defined diseases of early infancy (773) .. .. .	0.5	0.7	0.5	0.3	0.9	100	140	100	60	180	100
	Postnatal asphyxia and atelectasis (762) .. .. .	3.6	3.7	3.7	3.4	3.6	100	103	103	94	100	100
	Intracranial and spinal injury at birth (760) .. .. .	2.3	2.5	2.2	2.1	2.6	100	109	96	91	113	100
	Other birth injury (including maternal antepartum hæmorrhage) (761) .. .. .	0.6	0.7	0.5	0.5	0.7	100	117	83	83	117	100
	Erythroblastosis (770) .. .. .	0.7	0.7	0.7	0.9	0.5	100	100	100	129	71	100
	Hæmorrhagic disease of newborn (771) .. .. .	0.3	0.4	0.4	0.3	0.3	100	133	133	100	100	100
	Other causes .. .. .	1.1	1.2	1.1	1.1	1.1	100	100	100	100	100	100
	Total causes mainly of postnatal origin .. .. .	9.9	12.8	9.7	7.1	12.2	100	129	98	72	123	100
Post-Natal Group	Gastro-enteritis (including diarrhoea of newborn) (571, 764) .. .. .	1.2	1.7	1.2	0.7	1.3	100	142	100	58	108	100
	Pneumonia and bronchitis (490-493, 763; 500-502) .. .. .	5.7	7.5	5.3	4.2	7.4	100	132	93	74	130	100
	Causes classified as infective (001-138); others mainly infective in origin* .. .. .	1.8	2.3	1.9	1.3	2.4	100	128	106	72	133	100
	Whooping cough; Measles (056, 085) .. .. .	0.5	0.6	0.6	0.4	1.1	100	120	120	80	220	100
	Acute upper respiratory infections and influenza (470-475, 480-483) .. .. .	0.3	0.5	0.3	0.2	0.4	100	167	100	67	133	100
	Otitis media and mastoiditis, empyema, pleurisy (391-393, 518, 519) .. .. .	0.2	0.3	0.2	0.1	0.1	100	150	100	50	50	100
	Septicæmia, skin and subcutaneous tissue infections, sepsis of newborn (053, 690-698, 765-768) .. .. .	0.2	0.2	0.2	0.1	0.1	100	100	100	50	50	100
	Tuberculosis, other than tuberculous meningitis (001-008, 011-019) .. .. .	0.1	0.1	0.1	0.0	0.1	100	100	100	0	100	100
	Other causes .. .. .	0.1	0.1	0.1	0.1	0.1	100	100	100	0	100	100
	Total causes .. .. .	10.1	12.9	10.0	7.8	12.9	100	133	100	72	133	100



	Tuberculous meningitis (010) .. .. .	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100	100	100	100	100
	Meningococcal infections and non-meningococcal meningitis (057, 340) .. .. .	0.4	0.5	0.3	0.3	0.3	0.3	0.3	100	125	75	75	75
	Causes classified as infective not specified above (remainder 001-138) .. .. .	0.1	0.1	0.2	0.2	0.1	0.1	0.1	100	100	200	100	100
	Accidental mechanical suffocation from vomit, food, foreign body, or in cot (E921-E925) .. .. .	0.9	1.0	1.0	1.0	0.6	0.9	0.9	100	111	111	67	100
	Lack of care, neglect (including foundlings), infanticide (E926, E980-E985) .. .. .	0.2	0.2	0.2	0.2	0.2	0.1	0.1	100	100	100	100	50
	Other accidental causes (remainder E800-E999) .. .. .	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100	100	100	100	100
	Total causes remaining .. .. .	1.5	1.6	1.4	1.2	2.4	2.4	2.4	100	107	93	80	160
UNCLASSIFIED	Neoplasms (140-239) .. .. .	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100	100	100	100	100
	Other remaining causes .. .. .	1.3	1.5	1.3	1.0	2.3	2.3	2.3	100	115	100	77	177
	Immaturity, or with mention of immaturity (774; 776; 760.5-773.5) .. .. .	10.1	11.1	9.7	8.9	11.9	11.9	11.9	100	110	96	88	118
	Immaturity alone, or primary to dis. other than of early infancy (774, 776) .. .. .	5.7	6.6	5.4	4.8	7.2	7.2	7.2	100	116	95	84	126
	Immaturity associated with diseases of early infancy (760.5-773.5) .. .. .	4.4	4.5	4.3	4.1	4.7	4.7	4.7	100	102	98	93	107
	All other causes (760.0-773.0 and remainder) .. .. .	19.6	23.3	19.4	15.7	24.2	24.2	24.2	100	119	99	80	123

\* 340, 391-393, 470-483, 518, 519, 690-698, 765-768.

Table LX.—Secular Trend of Stillbirths per 1,000 total births, 1928–1951, and of Deaths in the Neonatal, Post-neonatal and other Age Periods under One Year per 1,000 live births, 1906–1951. England and Wales

Quinquennium and year	Total infant mortality (under 1 year)	Infant mortality per 1,000 live births,* at various ages										Stillbirths and infant deaths—Rates per 1,000 total births†				
		Neonatal mortality (under 4 weeks)	Early neonatal mortality (under 1 week)	Late neonatal mortality (1 week and under 4 weeks)	Post-neonatal mortality (4 weeks and under 1 year)	Early neonatal period		Post-neonatal period			Stillbirths plus infant deaths under 1 year	Stillbirths (late fetal deaths, at or over 28 weeks gestation)	Stillbirths plus infant deaths under 1 week—"Perinatal Mortality"	Infant deaths at 1 week and over	Stillbirths plus infant deaths under 4 weeks	
						Under 1 day	1 day and under 1 week	4 weeks and under 3 months	3 months and under 6 months	6 months and under 1 year						
1906-1910	117.1	40.2	24.5	15.7	76.9	11.5	13.0	22.8	22.0	32.1	—	—	—	—	—	—
1911-1915	108.7	39.0	24.1	14.9	69.8	11.4	12.7	20.2	19.6	30.0	—	—	—	—	—	—
1916-1920	90.9	37.0	23.4	13.7	53.9	11.0	12.4	16.5	14.6	22.8	—	—	—	—	—	—
1921-1925	74.9	33.4	21.7	11.7	41.6	10.4	11.3	12.8	11.3	17.5	—	—	—	—	—	—
1926-1930	67.6	31.8	21.8	9.9	35.7	10.3	11.5	10.8	9.5	15.4	—	—	—	—	—	—
1931-1935	61.9	31.4	22.4	9.0	30.5	10.7	11.7	9.9	8.5	12.1	—	—	—	—	—	—
1936-1940	55.3	29.2	21.5	7.7	26.0	10.4	11.2	8.8	7.8	9.4	—	—	—	—	—	—
1941-1945	49.8	26.0	18.7	7.2	23.8	9.3	9.5	8.9	7.7	7.2	—	—	—	—	—	—
1946-1950	36.3	21.1	16.2	4.9	15.2	7.9	8.4	5.8	5.0	4.4	—	—	—	—	—	—
1928	65.3	31.1	21.6	9.5	34.2	10.4	11.2	10.7	9.3	14.2	102.6	40.1	60.8	40.1	41.7	69.9
1929	73.9	32.8	22.2	10.5	41.1	10.4	11.9	11.5	10.6	19.0	111.4	40.0	61.4	40.0	50.0	71.6
1930	60.2	30.9	22.0	8.9	29.3	10.4	11.6	9.7	7.9	11.7	98.3	40.8	61.9	40.8	36.4	70.4
1931	65.7	31.5	22.1	9.5	34.2	10.4	11.7	10.8	9.2	14.2	104.5	40.9	62.1	40.9	42.4	71.2
1932	64.5	31.5	22.4	9.2	33.0	10.6	11.8	10.8	9.0	13.2	103.7	41.3	62.8	41.3	40.8	71.6
1933	62.7	32.1	22.9	9.3	30.6	11.0	11.8	9.8	8.6	12.2	102.5	41.4	63.4	41.4	39.1	72.3
1934	59.3	31.4	22.7	8.7	27.9	10.9	11.8	8.9	7.7	11.3	96.7	40.5	62.2	40.5	34.5	70.5
1935	57.0	30.4	22.0	8.4	26.6	10.7	11.3	9.1	7.7	9.8	95.4	40.7	61.9	40.7	33.5	69.9
1936	58.7	30.2	21.9	8.2	28.5	10.7	11.3	9.3	8.3	10.9	95.9	39.7	60.8	39.7	35.2	68.7
1937	57.7	29.7	22.0	7.8	28.0	10.8	11.2	9.4	8.3	10.3	94.4	39.0	60.2	39.0	34.2	67.6
1938	52.8	28.3	21.1	7.1	24.5	10.3	10.8	8.2	7.3	9.0	88.9	38.3	58.6	38.3	30.4	65.5
1939	50.6	28.3	21.2	7.1	22.2	10.3	10.9	7.9	7.0	7.3	86.9	38.1	58.5	38.1	28.4	65.3
1940	56.8	29.6	21.3	8.3	27.2	9.8	11.5	9.3	8.2	9.7	92.5	37.2	57.7	37.2	34.7	65.7
1941	60.0	29.0	20.7	8.3	31.1	10.1	10.6	11.3	9.7	10.1	92.4	34.8	54.7	34.8	37.7	62.7
1942	50.6	27.2	19.6	7.7	23.4	9.6	10.0	8.7	7.5	7.2	81.1	33.2	52.1	33.2	29.0	59.4
1943	49.1	25.2	18.3	6.9	23.9	9.1	9.2	8.8	7.8	7.3	77.5	30.1	47.9	30.1	29.6	54.6
1944	45.4	24.4	17.5	6.9	21.1	8.8	8.8	8.0	7.0	6.1	70.9	27.6	44.5	27.6	26.3	51.1
1945	46.0	24.8	18.0	6.8	21.3	9.0	9.0	8.2	7.0	6.1	73.4	27.6	45.2	27.6	28.1	51.8
1946	42.9	24.5	17.8	6.7	18.4	8.7	9.1	7.1	6.1	5.2	66.9	27.2	44.3	27.2	22.6	50.7
1947	41.4	22.7	16.5	6.2	18.6	7.8	8.7	6.9	6.0	5.7	65.0	24.1	40.3	24.1	24.6	46.4
1948	33.9	19.7	15.6	4.1	14.2	7.8	7.9	5.5	4.8	3.9	56.9	23.2	38.5	23.2	18.4	42.5
1949	32.4	19.3	15.6	3.7	13.0	7.6	8.0	4.8	4.4	3.8	54.6	22.7	38.0	22.7	16.7	41.5
1950	29.6	18.5	15.2	3.3	11.1	7.2	8.0	4.3	3.7	3.1	51.7	22.6	37.4	22.6	14.3	40.7
1951	29.7	18.8	15.5	3.3	10.9	7.5	8.0	4.1	3.6	3.2	52.2	23.0	38.2	23.0	14.0	41.5

\* Rates based on related live births from 1926 onwards.  
† The births upon which these rates are based for successive calendar years are numbers registered up to 1938 inclusive and numbers of occurrences from 1939.



Table LXI.—Secular Trend of Legitimate and Illegitimate Stillbirths per 1,000 total births, and of Legitimate and Illegitimate Deaths in Early Neonatal, Late Neonatal and Post-neonatal Periods per 1,000 related live births. England and Wales, 1936–1951

		1936 to 1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Legitimate Infants	Stillbirths (Late foetal deaths at or over 28 weeks) ... ..	38.3 100	36.7 96	34.2 89	32.8 86	29.6 77	27.0 70	27.3 71	26.7 70	23.8 62	22.7 59	22.3 58	22.2 58	22.6 59
	... .. Annual rate ... .. ... .. per cent of 1936–39 ... ..													
	Early neonatal deaths (Under 1 week) ... ..	21.0 100	20.9 100	20.2 96	18.9 90	17.7 84	16.9 80	17.4 83	17.4 83	16.1 77	15.3 73	15.1 72	14.9 71	15.2 72
	... .. Annual rate ... .. ... .. per cent of 1936–39 ... ..													
	Late neonatal deaths (1 week and under 4 weeks) ... ..	7.4 100	8.1 109	8.1 109	7.5 101	6.8 92	6.6 89	6.4 86	6.5 88	6.0 81	4.0 54	3.6 49	3.3 45	3.3 45
Illegitimate Infants	Post-neonatal deaths (4 weeks and under 1 year) ... ..	25.1 100	26.6 106	30.5 122	22.8 91	23.2 92	20.2 80	20.3 81	17.7 71	18.3 73	14.0 56	13.0 52	11.0 44	10.8 43
	... .. Annual rate ... .. ... .. per cent of 1936–39 ... ..													
	Stillbirths (Late foetal deaths at or over 28 weeks) ... ..	49.6 100	47.6 96	45.8 92	40.8 82	37.5 76	34.3 69	31.5 64	33.2 67	30.6 62	31.6 64	29.5 59	29.1 59	31.6 64
	... .. Annual rate ... .. ... .. per cent of 1936–39 ... ..													
	Early neonatal deaths (Under 1 week) ... ..	34.4 100	31.2 91	29.8 87	30.0 87	27.0 78	25.2 73	24.3 71	23.7 69	23.5 68	22.0 64	24.9 72	21.4 62	21.4 62
Illegitimate Infants	Late neonatal deaths (1 week and under 4 weeks) ... ..	10.9 100	12.8 117	11.2 103	10.7 98	9.3 85	10.3 94	10.0 92	9.6 88	9.9 91	5.5 50	4.8 44	4.5 41	4.3 39
	... .. Annual rate ... .. ... .. per cent of 1936–39 ... ..													
	Post-neonatal deaths (4 weeks and under 1 year) ... ..	41.6 100	38.4 92	41.3 99	34.3 82	35.1 84	33.0 79	30.5 73	26.9 65	24.7 59	17.9 43	15.1 36	13.6 33	12.8 31
	... .. Annual rate ... .. ... .. per cent of 1936–39 ... ..													

**Table LXII.—Secular Trend of Stillbirths per 1,000 total births, and of Deaths in the Neonatal and Post-neonatal Periods per 1,000 related live births. England and Wales ; Standard Regions, 1947–1951**

	Standard Regions	Rates in each year 1947 to 1951					Rates in 1948 to 1950 per cent of rate in 1947				
		1947	1948	1949	1950	1951	1947	1948	1949	1950	1951
<b>STILLBIRTHS</b> (at or over 28 week gestation) per 1,000 live and stillbirths.	<b>ENGLAND AND WALES</b>	24.1	23.2	22.7	22.6	23.0	100	96	94	94	95
	<b>NORTH OF ENGLAND ...</b>	26.2	25.5	24.7	24.3	24.8	100	97	94	93	95
	Northern ... ..	26.1	25.2	24.6	25.8	24.6	100	97	94	99	94
	East and West Ridings ...	25.9	24.2	23.5	22.9	24.2	100	93	91	88	93
	North Western ... ..	26.5	26.5	25.5	24.4	25.2	100	100	96	92	95
	<b>MIDLANDS AND EAST ...</b>	23.6	23.1	22.2	22.6	23.1	100	98	94	96	98
	North Midland ... ..	24.0	23.9	22.2	23.0	23.1	100	100	93	96	96
	Midland ... ..	24.9	23.5	23.1	23.8	23.9	100	94	93	96	96
	Eastern ... ..	21.3	21.5	20.9	20.6	21.9	100	101	98	97	103
	<b>SOUTH OF ENGLAND ...</b>	22.0	20.5	20.2	20.1	20.9	100	93	92	91	95
	London and South Eastern	21.6	19.9	19.9	19.6	20.8	100	92	92	91	96
	Southern ... ..	21.8	20.9	19.4	18.9	19.4	100	96	89	87	89
	South Western ... ..	23.5	22.4	22.0	22.5	22.3	100	95	94	96	95
	<b>WALES ... ..</b>	28.4	26.8	28.2	27.2	26.4	100	94	99	96	93
<b>NEONATAL MORTALITY</b> per 1,000 related live births	<b>ENGLAND AND WALES</b>	22.7	19.7	19.3	18.5	18.8	100	87	85	81	83
	<b>NORTH OF ENGLAND ...</b>	26.0	21.8	21.2	20.2	20.6	100	84	82	78	79
	Northern ... ..	24.7	21.3	22.0	20.8	21.6	100	86	89	84	87
	East and West Ridings ...	24.3	20.7	20.6	19.5	19.1	100	85	85	80	79
	North Western ... ..	27.7	22.6	21.3	20.3	20.9	100	82	77	73	75
	<b>MIDLANDS AND EAST ...</b>	22.3	20.1	18.4	18.4	18.5	100	90	83	83	83
	North Midland ... ..	23.2	21.5	18.8	18.9	17.6	100	93	81	81	76
	Midland ... ..	22.7	21.1	19.6	19.4	20.3	100	93	86	85	89
	Eastern ... ..	20.7	16.9	16.2	16.3	16.8	100	82	78	79	81
	<b>SOUTH OF ENGLAND ...</b>	19.6	17.1	17.4	16.5	17.0	100	87	89	84	87
	London and South Eastern	18.7	16.4	16.8	15.9	16.7	100	88	90	85	89
	Southern ... ..	20.2	18.0	17.6	16.7	16.9	100	89	87	83	84
	South Western ... ..	22.7	18.8	19.7	18.5	18.2	100	83	87	81	80
	<b>WALES ... ..</b>	25.3	22.5	22.9	21.6	21.8	100	89	91	85	86
<b>POST- NEONATAL MORTALITY</b> per 1,000 related live births	<b>ENGLAND AND WALES</b>	18.6	14.2	13.0	11.1	10.9	100	76	70	60	59
	<b>NORTH OF ENGLAND ...</b>	24.6	18.9	17.8	14.6	13.8	100	77	72	59	56
	Northern ... ..	23.7	20.5	19.9	16.9	15.5	100	86	84	71	65
	East and West Ridings ...	21.9	17.3	15.4	13.3	13.8	100	79	70	61	63
	North Western ... ..	26.8	19.2	18.1	14.2	13.0	100	72	68	53	49
	<b>MIDLANDS AND EAST ...</b>	16.9	13.5	12.4	10.6	10.5	100	80	73	63	62
	North Midland ... ..	19.0	15.6	13.8	11.7	11.1	100	82	73	62	58
	Midland ... ..	19.1	14.7	13.8	11.8	11.3	100	77	72	62	59
	Eastern ... ..	11.1	9.1	8.6	7.6	8.6	100	82	77	68	77
	<b>SOUTH OF ENGLAND ...</b>	13.7	10.0	8.8	7.8	7.8	100	73	64	57	57
	London and South Eastern	14.2	10.5	8.8	7.8	7.4	100	74	62	55	52
	Southern ... ..	13.1	8.8	8.6	7.9	8.3	100	67	66	60	63
	South Western ... ..	12.6	9.5	9.1	7.9	8.3	100	75	72	63	67
	<b>WALES ... ..</b>	23.9	16.8	16.4	13.9	14.3	100	70	69	58	60



## INFECTIOUS DISEASES

### Infectious Disease generally

This review omits any reference to a number of infectious diseases such as chickenpox, rubella and mumps ; they are very rarely fatal and, though a large proportion of the child population are attacked, the volume of morbidity is not measurable, except by special survey, because the diseases are not notifiable. Other infectious diseases, for example cholera, typhus and anthrax, receive no mention because subject to continued vigilance their occurrence is rare in the extreme. Reference to erysipelas has been omitted and no special mention has been made of syphilis. Diseases in the infective and parasitic group apart from tuberculosis no longer appear among the important causes of death in childhood ; and tuberculosis, though by no means to be discounted as a serious problem, is much less fatal than it was in earlier years. In 1901-10 the C.M.I. for typhoid and paratyphoid was 23·84, in 1951 0·12 ; in 1901-10 the C.M.I. for tuberculosis of all forms was 2·70, in 1950 0·51 ; in 1901-10 the four diseases, scarlet fever, diphtheria, whooping cough and measles produced a combined death rate per million at ages under 15 of 2,572 ; in 1951 this was reduced to 79.

### Typhoid and Paratyphoid (040, 041)

For the intestinal infections classed to this group the notified cases and deaths, with the notification rates, from 1944 to 1951 are shown in Table LXIII (page 138). The notification rate has reached such a low level, despite the effect of improved diagnostic services which have made notification more complete, that sharp fluctuations from year to year naturally occur by the play of chance ; the fewer the outbreaks the less the likelihood that their statistics merge to produce the appearance of more constant prevalence. An upward fluctuation occurred in 1951. The sharp decline in mortality in 1949 associated with the introduction of chloramphenicol has persisted and, in 1951, in spite of raised incidence, only 21 deaths were registered, yielding a ratio of deaths to 1,000 notifications of 16 compared with 48, 65, 36, 30 in 1947, 1948, 1949 and 1950. It will be seen from page 137 that of the 21 deaths in 1951 there were two cases in which death was certified as due to cardiac conditions originating in attacks of typhoid many years previously. In accordance with international procedure these deaths have been assigned to typhoid though clearly they are not part of the fatality of 1951 cases, a truer value of which would therefore be 15 deaths per 1,000 cases.

The incidence of notified typhoid and paratyphoid fever was in 1951 spread fairly evenly over the regions but the notification rates were generally higher in the conurbations than elsewhere, the exceptions being the Tyneside conurbation and Greater London.

### Food poisoning

The International Classification rubric 042 " other Salmonella infections " to which 36 deaths were assigned in 1951 does not correspond to a notifiable disease ; but " food poisoning," whether suspected or confirmed, is statutorily notifiable and in Table LXIV (page 139) the notification rates are shown by sex and geographical area.

The notification rate for females was higher than for males in most of the areas shown.

The highest notification rates were observed in the Tyneside and Merseyside conurbations, the North Midland and Midland regions, the South West region and Greater London. Over the whole country notified cases were relatively more frequent both in rural areas and in larger towns than in the small and medium sized towns. This factor was also the subject of comment in the Text of the Annual Review for 1950 (page 60).

### **Dysentery (045-048)**

Notifications and deaths from the various types of dysentery (from 1931 to 1951) are shown in Table LXV (page 140). The trend toward more complete notification of dysentery which has been the concomitant of improved pathological laboratory services has been the subject of comment in previous Reviews and is illustrated by the increased ratio of notifications to deaths in the final column of Table LXV. This ratio, which was of the order of 10 in the early 'thirties, increased tenfold by 1945, the increase being most rapid during the final years of the 1939-45 war. In 1946 and 1947 the ratio declined temporarily but in 1948 there was a further rise and in 1951 the ratio rose to 386, over forty times as large as in 1931. That notification is made upon the basis of laboratory investigation rather than upon clinical assessment only is suggested by the relatively low degree of correction of diagnoses.

Notification rates and fatality ratios by sex and age are shown in Table LXVI (page 141). The risk of infection is higher in the very young and very old. Among young children, as is the common experience with many other infections, boys are more affected than girls. Among adults, the sex preponderance is reversed. Fatality is however higher in males at all ages, though less consistently so at advanced ages where most of the deaths are concentrated.

For all forms of dysentery, mortality has steadily declined since 1941 when the death rate rose sharply in reaction to the adverse conditions of that year. Even then the total deaths numbered only 329. The deaths from 1947 to 1950 were 81, 61, 45, 65 and in 1951 there were only 74 deaths, in spite of the very greatly increased prevalence of infection.

In Table LXVII (page 142) the notification rates and fatality ratios are shown for 1951 in the different regions of England and Wales.

### **Scarlet fever, Streptococcal Sore Throat (050, 051)**

Scarlet fever and streptococcal sore throat are treated as distinct entities in the 6th Revision of the International List and it is to scarlet fever only that the present notification regulations apply. It will be seen from Table LXIX (page 143) that deaths assigned to scarlet fever have dwindled from 469 in 1931 to 37 in 1951 ; and of those 37 deaths it is known that 22 were by International usage assigned to that cause because scarlet fever was shown on the certificate though the onset was more than 5 years earlier ; they were thus not related to the cases occurring in 1951. Deaths assigned to streptococcal throat in 1951 numbered 29. This dramatic decline in mortality is not due to a proportionate decline in the incidence of infection. The notification rate fluctuates from year to year ; over the last 10 years it has varied from 133 per 100,000 in 1946 to 275 in 1943. It was last exceptionally high in 1934 at 376. In 1951 it was 111. The decline in mortality, although accelerated first by the introduction



of the sulphonamides and later by penicillin, has been continuing for more than three quarters of a century and it seems that either the virulence of the disease has diminished or natural resistance has increased. Deaths assigned to scarlet fever amounted to 5·7 per 1,000 notified cases in 1931 and in 1951 the corresponding fatality ratio was only 0·8.

Notification rates and fatality ratios in 1951 by age and sex are shown in Table LXVIII (page 143) for scarlet fever only. Notified attacks were most prevalent between ages 3 and 10 but fatality was highest (though deaths were still rare) among the comparatively small number of adult cases. There was little difference in the experience of the two sexes, a small male excess in incidence under five years of age being followed by a female excess at older ages; on balance the total notification rate was slightly higher in males.

Notification and death rates and fatality ratios for different geographical areas are shown in Table LXX (page 144) for 1951. The notification rates were above average in the regions and most conurbations of the North and in Greater London and below average in the regions of the Midlands, East and the South. In general there is a gradient with urbanization, the notification rates (but not the fatality ratios) being higher in the more densely populated areas.

### **Diphtheria (055)**

From 1944, when original notifications were first fully corrected for revision of diagnosis, the notification rate at ages 0–14 fell from 183 per 100,000 to 5 per 100,000 in 1951; and there was a corresponding fall at ages 15 and over, from 21 to 1 per 100,000. The actual final notifications in 1944 were 23,199; in 1951 there were only 664. The death rate per million has fallen from 22 in 1944 to 1 in 1951, the actual deaths being 908 and 33 respectively. This decline is proportionate to the reduction in notified cases and it is significant that the case fatality at ages 0–14 which was indicated in 1944 by 50 deaths to every 1,000 notifications was of the same magnitude in 1951 (Table LXXI, page 145). At ages 15 and over the case fatality has apparently increased. Of the 9 adult deaths in 1951, however, 3 were attributed to attacks of diphtheria occurring many years previously (page 138).

The annual returns of immunization for 1951 made to the Ministry of Health by the Medical Officers of Health of Counties and County Boroughs have been summarized and Table LXXXII (page 154) shows the proportion immunized in the age groups 1–4 and 5–14 in each area as at 31st December, 1951.

In England and Wales as a whole in 1951 there was an increase in the proportion immunized at ages 5–14 years, as compared with 1949, from 74 to 77 per cent. This does not necessarily indicate an improvement in the degree of immunity of the population as a whole, because it takes no account of the interval since immunization took place and will therefore include a considerable number of children who have had time to lose some of their immunity. At ages 1–4 the proportion fell slightly from 62 to 61 per cent between these two years.

Table LXXXIII (page 156) compares the relative mortality and incidence of notified cases of diphtheria among those children who have at some time been immunized and among those who have not. At ages 1–4 the notification rate among the immunized (2·2) was less than a quarter of the corresponding rate among the unimmunized (9·9), and at ages 5–14 it was less than one eighth (1·8 and 16·3 respectively). The fatality ratio was also much lower among the immunized than among the unimmunized. Of the latter, a total of 359 notified



cases of diphtheria at ages under 15 gave rise to 23 deaths (a fatality ratio of 6·4 per cent) whereas for the same age groups among the immunized only 1 death resulted from 126 cases notified (a fatality ratio of 0·8 per cent).

### **Whooping Cough (056)**

In 1951 there were 169,441 final notifications, more than in any year since 1944, and there were more original notifications than in any preceding year from the date general notification was introduced in 1940. This followed a record figure in the preceding year ; nevertheless there were only 456 deaths (two occurred after intervals from onset of more than 20 years) compared with 678 in 1940, since when the ratio of deaths to notifications at all ages has been reduced by about four-fifths. The death rate at ages under 15 for whooping cough in 1951 was 46 per million compared with an average of 223 in 1931–35.

Table LXXII (page 146) shows that the sex and age pattern differs little from one year to another. Notifications (per 1,000) were maximal in the age group 3–4. As always, fatality was highest in the first year of life ; of the 456 deaths in 1951, 273 occurred in this age period and a further 119 occurred in the second year of life.

The regional distribution of the disease is shown in Table LXXIII (page 147). The notification rates were higher in the regions of the Midlands, East and South in contrast to 1950 when the rates were below average in these areas. The notification rate in Wales was much lower than the average for the country as a whole, as it was in 1950. There was little regional variation in fatality but compared with the average for England and Wales (2·7 deaths per 1,000 notifications) the ratio was exceptional in the Merseyside conurbation (4·8) and in Wales (5·2).

### **Meningococcal Infections (057)**

There were 1,390 final notifications of meningococcal infections and 298 deaths in 1951 (Table LXXIV, page 148). The 1951 notifications were more numerous than those of 1949 and 1950 and fit into a rising phase of the irregular upward and downward variation in prevalence which has been, in peace conditions, a normal part of the epidemiology of the disease. The case fatality (21·4 per cent of notifications) was somewhat lower than the average of 1948–50 (26·3). The majority of the deaths were in very young children; in 1951, 208 of the 298 deaths were of children under 5 years of age and 104 were in the first year of life.

### **Acute Poliomyelitis (080, 081)**

Prior to 1947 the number of cases of poliomyelitis notified each year rarely exceeded a thousand but in that year there were 9,335 original and 7,766 final notifications and the subsequent experience of very high prevalence again in 1949 and 1950 has made it clear that periodical epidemics of the disease have replaced the lower and less fluctuating prevalence of an endemic character. 1951 like 1948 was a year of low inter-epidemic prevalence. There were only 2,609 final notifications and 217 deaths, compared with 7,752 notifications and 755 deaths in 1950. The case fatality was 8 per cent. This fatality is lower than in pre-epidemic times ; in 1944 for example 21 per cent of notified cases were fatal but the epidemic outbreak in 1947 undoubtedly increased public anxiety and raised the intensity of case-finding ; it is likely that from that time a greater proportion of the milder and almost symptomless cases have been brought to the notice of practitioners and have been notified. In 1950 for the



first time notifying practitioners were asked to distinguish between paralytic and non-paralytic cases ; in 1951, 41 per cent of the notifications were of non-paralytic cases, compared with 28 per cent in 1950.

The notification rates are shown by sex and age in Table LXXV (page 148). Following the first epidemic of 1947, in which larger proportions of adults were affected, the age distribution of cases reverted to that which had prevailed in earlier years—in 1951, 30 per cent of cases were under 5 years of age. The disease remains one which mainly attacks children or adolescents but those adults who are attacked suffer a much higher fatality than children.

The geographical distribution of the disease in 1951 is shown in Table LXXVI (page 149). It has been noted (Benjamin and Logan, 1953)\* that the mean prevalence over the four years 1947–50 was significantly above the national average in the Midland, London and South Eastern, Southern and South Western regions and below average in the Northern, North Western, Eastern and Wales regions. In a single year of low prevalence such as 1951 the numbers were not large enough to permit geographical variation to be reliably assessed but broadly in 1951 the pattern was similar to that of 1947–50 except that in this particular year the notification rate was below, not above, average in London and in the South Western region. Over the four years 1947–50 the highest death rates were experienced in the Southern and South Western regions. It was still true in 1951 that of all regions the South Western had the highest death rate but mortality in the Southern region was not exceptional.

Over the four years 1947–50 the average death rate from poliomyelitis in England and Wales was 14 per million, compared with an average in 1943–46 of 3 per million. In 1951 the death rate was 5 per million. Of the 217 deaths in 1951, 66 were specified as from the bulbar form or polioencephalitis ; 26 were from late effects.

### **Acute Infectious Encephalitis (082, 083)**

There were 334 deaths in 1950 from acute infectious encephalitis (including 216 from late effects). The number of deaths from this condition has been falling steadily since 1931, apart from a temporary wartime rise in 1940–41, but the pace of the decline in the last two or three years has been much slower than in earlier years. In 1951 there were 202 final notifications of the infective type and 110 final notifications of post infectious encephalitis, i.e. following or accompanying infectious diseases (measles, mumps, chickenpox, have so far been the most common diseases mentioned but the necessary supplementary information available is, as yet, scanty). Deaths in this latter group of which there were only a small number, are assigned under the 6th Revision to the primary infectious disease and are not included in the deaths from encephalitis shown in Table LXXVII (page 150).

It will be seen from Table LXXVIII (page 151) that the deaths were well spread over all ages ; this spread arises mainly from the fact that two-thirds of the deaths follow, from late effects, many years after the onset of acute disease. Of the 118 deaths from acute disease, 41 occurred before the age of 5 years, the remainder being spread over all age groups.

### **Measles (085)**

Although there were 616,192 final notifications of measles in 1951, there were only 317 deaths. As recently as in 1940 there were 857 deaths and ten years earlier in 1930 there were 4,188 deaths.

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\* British Journal of Preventive and Social Medicine, Vol. 7, No. 3 (July, 1953), page 131.



As can be seen from Table LXXIX (page 151) the normal pattern was followed in 1951, of a slight female excess in the first year of life, no appreciable sex differences between 1 and 10 years, and a female excess thereafter, i.e. the average age of reported attack is later in females than in males. In total relatively more males than females suffer notified attacks. Of the 317 deaths, 173 were of males ; 98 were in the first year of life, and 75 in the second. In examining the regional distribution of Table LXXX (page 152) it must be borne in mind that the epidemic rhythm is not the same in all areas nor at present, because of the continuing effect of disturbances in the birth rate and re-distribution of population in housing development, constant in any one area. In some towns biennial epidemics are the rule, with very minor prevalence in the intervening years ; in other towns regular annual epidemics occur ; and some areas seem to be in a transitional stage between the two. The disease is nearly always most epidemic in the winter months (December and January are commonly the months of rapid spread) and a great deal seems to depend upon whether in a particular locality the susceptibles are exhausted before the refractory period of the following autumn. In the previous year, 1950, on the whole the Southern regions had lower, and the Northern regions higher prevalence than elsewhere ; in 1951, not unexpectedly, this differential was reversed. For prevalence in the long run is fairly evenly shared and it is a matter of which areas suffer an epidemic rise in a particular year and which in the following year.

### **Smallpox (084)**

In 1951 there were 10 deaths from smallpox—a notable event because of its rare occurrence in England and Wales. The country was entirely free of fatal attacks from 1938 to 1944 ; most of the outbreaks since then have had their origin in the return of service men to this country from the Far East in a state of incubating the disease. In 1951 the outbreak occurred in Brighton. The disease was introduced into the country by an R.A.F. officer who flew from Karachi via Malta, landed in Scotland and travelled to Brighton on 29th November, 1950. A full account of the spread of the outbreak has been given in the Annual Report of the Chief Medical Officer of the Ministry of Health for 1950. The outbreak was confined to Brighton and was brought under control by the careful tracing and surveillance of contacts combined with intensive vaccination measures. There were 27 cases in 1951, 10 fatal, and the last case was removed to hospital on 22nd January.

In all during the outbreak and the period of anxiety following the outbreak some 80,000 persons were vaccinated. About one-third of those were primary vaccinations and the remainder revaccinations. Much light upon the protective role of vaccination can be thrown by relating the fatalities to their vaccination state. This has been done in Table LXXXI (page 153). Among those cases which were not vaccinated after exposure to infection (second line of table) 6 cases had either never been vaccinated or had been vaccinated in infancy without any renewal of protection and among these 2 deaths occurred ; one only had been revaccinated since infancy—this case was not fatal. Of those who were vaccinated after exposure most of the 22 cases and all the 8 who died had either never been vaccinated or had been vaccinated only in infancy ; while 17 of these unprotected cases were vaccinated before onset they were clearly incubating the disease. Neither of the 2 cases died which had been revaccinated since infancy but were nevertheless attacked.

### **Deaths from infectious disease occurring a long period after onset**

The rules for classification, embodied in the International Statistical Classification of Diseases, Injuries and Causes of Death, 1948, state that “ when an acute



infective disease classified to categories 040-043, 050, 055, 056, 058, 084-087, 100-108 is certified as the underlying cause of some other condition and the interval between its onset and death is stated to be one year or more, it is recommended that such deaths should be appropriately identified in tabulation". This practice has been followed in England and Wales and the deaths in question in 1951 are separately tabulated below. Only four infectious diseases were involved, Typhoid (2 deaths), Scarlet Fever (22 deaths), Diphtheria (3 deaths) and Whooping Cough (3 deaths).

Age	Interval between onset of infectious disease and death (years)					
	1-4	5-9	10-19	20-29	30-39	40 and over
Typhoid fever (040)						
45-64 ... ..	—	—	—	—	—	1
65 and over ...	—	—	—	—	—	1
Scarlet fever (050)						
5-14 ... ..	—	1	—	—	—	—
15-44 ... ..	—	1	2	2	1	—
45-64 ... ..	—	—	1	—	2	6
65 and over ...	—	—	1	—	2	3
Diphtheria (055)						
45-64 ... ..	—	—	—	—	1	1
65 and over ...	—	—	—	—	—	1
Whooping cough (056)						
5-14 ... ..	1	—	—	—	—	—
15-44 ... ..	—	—	—	1	—	—
45-64 ... ..	—	—	—	—	—	—
65 and over ...	—	—	—	—	—	1

Typhoid fever

Both these deaths were of females, aged 55 and 74 respectively. The younger was certified as dying from congestive cardiac failure due to mitral stenosis, and the older woman was certified as dying from hypostatic pneumonia due to chronic endocarditis. Both were stated to have suffered from typhoid as schoolgirls.

Scarlet fever

Details of age, sex, other conditions on death certificate, and interval (in years) since onset of scarlet fever, in that order, are :

14	M	Syncope ; valvular heart disease ; myocarditis	...	9
20	F	Uræmia ; chronic nephritis	... ..	9
23	F	„ „ „	... ..	14
27	F	„ „ „	... ..	16
33	M	„ „ „	... ..	33
31	M	Nephritis, chronic parenchymatous ; hypertension		20
50	F	Mitral stenosis...	... ..	30
53	F	Cardiac muscle failure ; chronic valvulitis and chronic myocarditis	... ..	37

53	F	Cerebral hæmorrhage ; hyperpiesis ; nephritis	...	15
64	M	Auricular fibrillation ; mitral stenosis	... (in childhood)	
47	M	Cachexia ; pyelonephritis ; spastic diplegia	...	46
64	M	Hypostatic pneumonia ; myocarditis and endocarditis	... .. (in infancy)	
52	F	Chronic nephritis ; hypertension	... .. (many years ago)	
58	F	Cardiac asthma ; myocarditis	... .. (in childhood)	
70	F	Coronary thrombosis ; valvular heart disease ; left bundle branch block	... .. 64	
78	F	Myocardial degeneration ; chronic endocarditis	(when a child)	
71	F	Myocardial degeneration ; mitral stenosis	... .. 35	
68	F	Auricular fibrillation ; chronic endocarditis	...(in childhood)	
39	F	Cardiac failure ; mitral stenosis	... .. 25	
57	F	Congestive heart failure ; mitral incompetence	...(in childhood)	
67	F	Valvular disease of heart	... .. 30	
71	F	Myocardial degeneration ; chronic endocarditis ; arteriosclerosis	... .. 15-20	

## Diphtheria

There was one male aged 60 who died from aortic and mitral stenosis with a 30 year interval from onset of diphtheria ; and two females—one aged 60 who died of suppurative thyroiditis due to stenosis of trachea after tracheotomy 53 years earlier, and one aged 80 who died from cerebral thrombosis due to valvular disease of the heart with a 40 year interval since onset of diphtheria.

## Whooping cough

There was one male aged 8 who died of congestive heart failure and pneumonia, two years after whooping cough, and two females—one aged 25 died from bronchiectasis (? gangrene of lung) 21 years after whooping cough (this woman was pregnant and was delivered on the day of death), and the other aged 65 died of cerebral embolism and fibrosis of lungs 40 years after whooping cough.

**Table LXIII.—Typhoid and Paratyphoid Fevers : Corrected notifications\* and deaths, and notification and death rates per million living, 1944 to 1951**

	1944	1945	1946	1947	1948	1949	1950	1951
Deaths .. .. .	54	47	54	34	48	32	16	21†
Notifications .. .. .	542	535	1,229	706	742	893	529	1,301
Notification rate per million living .. .. .	13	13	29	16	17	20	12	30

\* Including cases in Port Health Districts which are uncorrected.

† Including 2 deaths which occurred one or more years after onset of the disease.



**Table LXIV.—Food Poisoning : Notification rates per 100,000 living by sex in Standard Regions and Population Density Aggregates, 1951**

Area	Notification rate per 100,000 living	
	Males	Females
<b>ENGLAND AND WALES</b> ... ..	12	14
<b>Conurbations</b> ... ..	13	15
<b>Areas outside conurbations</b> ... ..	11	14
Urban areas with populations of 100,000 and over	16	17
Urban areas with populations of 50,000 and under 100,000 ... ..	8	10
Urban areas with populations under 50,000 ...	9	10
Rural areas ... ..	13	17
<b>NORTH OF ENGLAND</b>		
<b>Regions:</b>		
Northern ... ..	13	13
East and West Ridings ... ..	6	6
North Western... ..	9	11
Total ... ..	9	10
<b>Conurbations:</b>		
Tyneside ... ..	16	14
West Yorkshire ... ..	3	4
South East Lancashire ... ..	9	13
Merseyside ... ..	16	16
Total ... ..	10	11
<b>MIDLANDS AND EASTERN</b>		
<b>Regions:</b>		
North Midland... ..	15	17
Midland ... ..	19	19
Eastern ... ..	9	9
Total ... ..	15	16
<b>Conurbation:</b>		
West Midland ... ..	11	13
<b>GREATER LONDON</b> ... ..	17	18
<b>SOUTH OF ENGLAND</b>		
<b>Regions:</b>		
Remainder of South East ... ..	5	16
Southern ... ..	14	14
South Western... ..	14	18
Total ... ..	11	16
<b>WALES</b> ... ..	6	13

**Table LXV.—Dysentery : Notifications and deaths, and ratio of notifications to deaths, 1931 to 1951**

Year	Number of notifications†	Number of deaths				Ratio of notifications to deaths (all forms)
		Amoebiasis	Bacillary dysentery	Other and unspecified forms of dysentery	All forms	
1931	836	8	40	47	95	8.8
1932	924	2	46	61	109	8.5
1933	783	5	37	33	75	10.4
1934	763	7	37	41	85	9.0
1935	1,177	8	55	32	95	12.4
1936	1,333	6	43	23	72	18.5
1937	4,167	6	61	44	111	37.5
1938	4,170	10	62	40	112	37.2
1939	1,941	10	63	23	96	20.2
1940	2,860	4	142	39	185	15.5
1941	6,670	15	244	70	329	20.3
1942	7,296	8	130	60	198	36.8
1943	7,905	6	88	30	124	63.8
1944	(a) 13,346	9	102	46	157	82.8
	(b) 13,000					
1945	(a) 16,774	11	113	41	165	98.5
	(b) 16,247					
1946	(a) 8,459	17	55	49	121	65.0
	(b) 7,870					
1947	(a) 4,168	16	48	17	81	46.4
	(b) 3,761					
1948	(a) 5,496	11	34	16	61	83.3
	(b) 5,084					
1949	(a) 4,875	8	25	7	40	113.0
	(b) 4,519					
1949*	(a) 4,875	13	25	7	45	100.4
	(b) 4,519					
1950*	(a) 18,230	17	43	5	65	265.7
	(b) 17,271					
1951*	(a) 29,663	14	57	3	74	386.0
	(b) 28,564					

\* Deaths according to the 6th (1948) Revision of the International List. Throughout the rest of the table deaths are according to the 5th (1938) Revision.

† (a) Original ; (b) Corrected, excluding cases in Port Health Districts. Up to 1943, figures are partially corrected.



Table LXVI.—Dysentery : Notification rates per 100,000 living and deaths per 1,000 notifications by sex and age, 1944 to 1951

Age	1944		1945		1946		1947		1948		1949		1949*		1950*		1951*	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Notifications per 100,000 living																		
0-	131	107	144	115	57	48	26	21	55	48	53	49	53	49	231	196	313	272
5-	51	43	58	54	25	24	7	5	18	17	18	15	18	15	72	67	148	130
15-	21	22	27	32	13	15	6	6	5	7	4	6	4	6	13	25	24	43
45-	11	15	17	21	12	13	9	10	5	6	3	5	3	5	8	12	15	20
65 and over	23	33	30	33	14	20	11	11	7	10	3	8	3	8	12	14	21	26
All ages	32	30	38	38	18	19	9	8	12	12	10	11	10	11	40	39	66	65
Deaths per 1,000 notifications																		
0-	17	12	14	9	21	13	38	11	10	5	7	3	7	3	1	2	2	2
5-	3	6	5	1	4	2	5	8	2	2	4	—	4	—	1	1	0	—
15-	8	3	9	2	26	2	32	9	23	3	21	7	26	9	7	1	1	0
45-	22	22	13	15	27	4	23	17	36	32	26	11	33	11	31	5	22	6
65 and over	43	28	36	38	34	48	19	37	14	33	63	22	78	22	47	35	22	21
All ages	13	11	12	8	21	10	27	16	14	10	12	6	13	7	5	3	3	2

\* Deaths according to 6th (1948) Revision of the International List.

Table LXVII.—Dysentery : Notification rates per 100,000 living, deaths per 1,000 notifications and corrected notifications per 1,000 original in Standard Regions and Population Density Aggregates, 1951

Area	Corrected notifications per 100,000 living	Deaths per 1,000 corrected notifications	Corrected notifications per 1,000 original	Area	Corrected notifications per 100,000 living	Deaths per 1,000 corrected notifications	Corrected notifications per 1,000 original
<b>ENGLAND AND WALES</b>	65	3	963	<b>MIDLANDS AND EASTERN Regions:</b>			
Conurbations .. ..	88	2	959	North Midland .. ..	55	1	869
<b>Areas outside conurbations</b>	51	3	969	Midland .. ..	45	3	979
Urban areas with populations of 100,000 and over	90	2	946	Eastern .. ..	86	3	991
Urban areas with populations of 50,000 and under	50	4	974	Total .. ..	60	2	950
Urban areas with populations under 50,000	35	6	982	<b>Conurbation:</b>			
Rural areas .. ..	41	3	989	West Midland .. ..	40	4	955
<b>NORTH OF ENGLAND</b>				<b>GREATER LONDON</b> .. ..	111	1	961
<b>Regions:</b>				<b>SOUTH OF ENGLAND</b>			
Northern .. ..	40	3	948	<b>Regions:</b>			
East and West Ridings .. ..	55	6	985	Remainder of South East .. ..	44	8	996
North Western .. ..	66	2	962	Southern .. ..	61	2	968
Total .. ..	57	3	966	South Western .. ..	47	4	1,003
<b>Conurbations:</b>				Total .. ..	50	4	987
Tyneside .. ..	65	—	936	<b>WALES</b>			
West Yorkshire .. ..	73	7	1,002	.. ..	31	5	972
South East Lancashire .. ..	88	0	960				
Merseyside .. ..	58	1	898				
Total .. ..	74	2	957				



**Table LXVIII.—Scarlet Fever : Notification\* rates per 100,000 living and deaths per 1,000 notifications by sex and age, 1951**

	Scarlet Fever			
	Notifications per 100,000 living		Deaths per 1,000 notifications	
	Males	Females	Males	Females
0- .. ..	25	31	—	9·8
1- .. ..	264	233	0·5	0·6
3- .. ..	711	678	0·2	0·4
5- .. ..	764	822	—	0·1
10- .. ..	155	211	0·4	0·7
15 and over ..	11	8	5·6	11·5
All ages .. ..	116	107	0·5	1·0

\* Fully corrected Scarlet Fever notifications, excluding cases in Port Health Districts.

**Table LXIX.—Scarlet Fever (excluding streptococcal sore throat) : Notification rates per 100,000 living, numbers of deaths, and death rates per 1,000 notifications, 1931 to 1951**

Year	Notification rate per 100,000 living*	Number of deaths†	Deaths per 1,000 cases notified
1931 .. ..	204	469	5·7
1932 .. ..	212	461	5·4
1933 .. ..	321	635	4·9
1934 .. ..	376	838	5·5
1935 .. ..	296	499	4·1
1936 .. ..	257	440	4·2
1937 .. ..	233	305	3·2
1938 .. ..	241	311	3·1
1939 .. ..	188	181	2·3
1940 .. ..	156	154	2·4
1941 .. ..	149	133	2·2
1942 .. ..	203	104	1·2
1943 .. ..	275	134	1·2
1944 .. ..	218	107	1·2
1945 .. ..	173	84	1·1
1946 .. ..	133	43	0·8
1947 .. ..	135	42	0·7
1948 .. ..	172	37	0·5
1949 .. ..	161	18	0·3
1949 .. ..	161	27	0·4
1950 .. ..	150	33	0·5
1951 .. ..	111	37	0·8‡

\* Corrected notifications from 1944, excluding cases in Port Health Districts.

† The figures shown below the line for 1949, 1950 and 1951 include deaths occurring one or more years after onset of the disease, numbering 22 in 1951.

‡ This ratio becomes 0·3 after excluding deaths occurring one or more years after onset of the disease.

Table LXX.—Scarlet Fever : Notification and death rates and fatality ratios at ages 0–14 years, in Standard Regions and Population Density Aggregates, 1951

Area	Notification rate per 100,000 living	Deaths per 1,000 notifications	Death rate per million living	Area	Notification rate per 100,000 living	Deaths per 1,000 notifications	Death rate per million living
<b>ENGLAND AND WALES</b>				<b>MIDLANDS AND EASTERN (contd.)</b>			
<b>Conurbations</b>	467	0.22	1.03	<b>Conurbation:</b>	384	0.49	1.87
Urban areas with populations of 100,000 and over	537	0.20	1.09	West Midland .. ..	..	..	..
Urban areas with populations of 50,000 and under	424	0.23	0.99	<b>Areas outside conurbation:</b>	?	?	2.23
100,000 .. ..	539	0.14	0.77	Urban areas with populations of 100,000 and over	?	?	—
Urban areas with populations under 50,000	403	1.02	4.10	Urban areas with populations of 50,000 and under	?	?	—
100,000 .. ..	431	0.11	0.48	100,000 .. ..	?	?	—
Urban areas .. ..	346	0.15	0.52	Urban areas with populations under 50,000	?	?	—
<b>NORTH OF ENGLAND</b>				Rural areas .. ..	?	?	—
<b>Regions:</b>				<b>GREATER LONDON</b>	571	—	—
Northern .. ..	543	—	—	.. ..	..	..	..
East and West Ridings .. ..	454	0.24	1.08	<b>SOUTH OF ENGLAND</b>			
North West .. ..	585	0.48	2.79	<b>Regions:</b>			
<b>Total</b>	536	0.30	1.61	Remainder of South East .. ..	369	—	—
<b>Conurbations:</b>				Southern .. ..	310	—	—
Tyneside .. ..	556	—	—	South Western .. ..	399	0.77	3.07
West Yorkshire .. ..	501	—	—	<b>Total</b>	360	0.31	1.11
South East Lancashire .. ..	689	0.28	1.90	Urban areas with populations of 100,000 and over	?	?	—
Merseyside .. ..	404	1.42	5.73	Urban areas with populations of 50,000 and under	?	?	4.35
<b>Total</b>	554	0.38	2.10	100,000 .. ..	?	?	1.64
<b>Areas outside conurbations:</b>				Urban areas with populations under 50,000	?	?	—
Urban areas with populations of 100,000 and over	?	?	—	Rural areas .. ..	?	?	—
Urban areas with populations of 50,000 and under	?	?	8.15	<b>WALES</b>			
100,000 .. ..	?	?	—	<b>Regions:</b>			
Urban areas with populations under 50,000	?	?	—	Wales I and II .. ..	446	0.38	1.69
Rural areas .. ..	?	?	—	Urban areas with populations of 100,000 and over	?	?	—
<b>MIDLANDS AND EASTERN</b>				Urban areas with populations of 50,000 and under	?	?	—
<b>Regions:</b>				100,000 .. ..	?	?	—
North Midland .. ..	430	—	—	Urban areas with populations under 50,000	?	?	—
Midland .. ..	407	0.47	1.90	Rural areas .. ..	?	?	5.72
Eastern .. ..	326	—	—				
<b>Total</b>	392	0.20	0.79				



**Table LXXI.—Diphtheria : Notification rates per 100,000 living and deaths per 1,000 notifications at ages 0–14 and 15 and over, 1944 to 1951**

Year	Notifications* per 100,000 living		Deaths per 1,000 notifications*	
	0–14	15 and over	0–14	15 and over
1944 .. ..	183	21	50	19
1945 .. ..	146	17	46	24
1946 .. ..	91	12	44	31
1947 .. ..	42	5	54	21
1948 .. ..	26	3	55	20
1949 .. ..	14	2	51	31
1950 .. ..	7	1	53	46
1951 .. ..	5	1	50	52†

\* Corrected figures, excluding cases in Port Health Districts.

† 35 per 1,000 notifications, excluding deaths occurring one or more years after onset of the disease.

Table LXXII.—Whooping Cough : Notification rates per 1,000 living and deaths per 1,000 notifications by sex and age, 1944 to 1951

Age	1944		1945		1946		1947		1948		1949		1950		1951	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Notifications* per 1,000 living.																
0—	14.5	15.1	9.4	10.0	12.8	14.1	12.2	13.2	18.3	20.0	12.9	13.8	18.5	19.0	21.2	22.8
1—	19.4	22.0	12.7	14.4	18.5	20.8	16.8	19.1	25.3	27.9	17.2	19.5	24.3	27.6	29.0	31.5
3—	20.7	24.1	14.2	16.5	21.0	24.7	18.9	22.6	29.5	34.8	20.2	24.0	30.0	35.4	30.5	35.5
5—	9.8	11.2	6.0	7.0	8.6	10.0	9.0	10.3	14.0	16.0	9.4	11.0	15.7	18.1	15.5	17.6
10—	0.8	1.0	0.5	0.6	0.6	0.8	0.6	0.7	0.8	1.0	0.6	0.8	0.7	0.9	0.9	1.0
15 and over	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1
All ages	2.2	2.3	1.4	1.5	2.1	2.2	2.1	2.2	3.3	3.4	2.3	2.4	3.5	3.7	3.9	3.9
Deaths per 1,000 notifications*																
0—	62.6	72.1	58.2	64.9	52.4	56.1	46.9	54.9	31.6	33.0	37.1	36.1	18.3	24.0	18.1	18.7
1—	9.4	13.0	9.1	14.1	6.7	10.3	9.8	12.8	4.0	6.6	2.8	5.8	1.6	2.5	3.1	3.8
3—	0.9	3.0	1.7	3.4	1.7	2.1	1.2	2.2	1.0	0.6	0.7	1.0	0.3	0.8	0.3	0.5
5—	0.9	1.1	0.7	1.5	0.2	0.6	0.2	1.3	0.1	0.2	0.6	0.3	0.2	0.1	0.2	0.2
10—	0.9	—	1.4	—	1.2	1.0	—	—	—	—	—	—	—	—	0.8	0.7
15 and over	2.5	1.6	—	1.3	2.9	3.3	—	2.0	3.4	1.9	—	1.8	1.9	1.4	1.4	1.6
All ages	10.3	12.0	9.9	12.0	8.1	9.3	8.8	10.6	4.8	5.4	4.9	5.3	2.2	2.8	2.6	2.8

\* Corrected figures, excluding cases in Port Health Districts.



Table LXXIII.—Whooping Cough : Notification, and death rates and fatality ratios at ages 0-14 years in Standard Regions and Population Density Aggregates, 1951

Area	Notification rate per 100,000 living	Deaths per 1,000 notifications	Death rate per million living	Area	Notification rate per 100,000 living	Deaths per 1,000 notifications	Death rate per million living
<b>ENGLAND AND WALES</b>				<b>MIDLANDS AND EASTERN (contd.)</b>			
Conurbations .. ..	1,712	2.7	46	Conurbation:			
Areas outside conurbations	1,687	2.3	39	West Midland .. ..	1,721	2.6	45
Urban areas with populations of 100,000 and over	1,727	2.9	51				
Urban areas with populations of 50,000 and under	1,761	2.7	48	Areas outside conurbation:			
100,000 .. ..	1,498	2.6	38	Urban areas with populations of 100,000 and over	?	?	51
Urban areas with populations under 50,000	1,743	2.9	51	Urban areas with populations of 50,000 and under	?	?	29
Rural areas .. ..	1,774	3.2	57	100,000 .. ..	?	?	60
				Urban areas with populations of under 50,000 ..	?	?	58
				Rural areas .. ..			
<b>NORTH OF ENGLAND</b>				<b>GREATER LONDON</b> .. ..	1,803	1.7	31
Regions:							
Northern .. ..	1,585	2.7	43				
East and West Ridings .. ..	1,648	3.0	50				
North Western .. ..	1,321	3.1	40				
Total .. ..	1,482	3.0	44				
				<b>SOUTH OF ENGLAND</b>			
Conurbations:				Regions:			
Tyneside .. ..	1,854	2.7	51	Remainder of South East ..	2,471	2.0	48
West Yorkshire .. ..	1,701	3.0	50	Southern .. ..	1,670	2.4	41
South East Lancashire ..	1,177	1.5	17	South Western .. ..	1,791	2.7	48
Merseyside .. ..	1,724	4.8	83	Total .. ..	1,962	2.3	46
Total .. ..	1,535	3.0	46	Urban areas with populations of 100,000 and over	?	?	25
Areas outside conurbations				Urban areas with populations of 50,000 and under	?	?	30
Urban areas with populations of 100,000 and over	?	?	48	100,000 .. ..	?	?	48
Urban areas with populations of 50,000 and under	?	?	53	Urban areas with populations of under 50,000 ..	?	?	60
100,000 .. ..	?	?	37	Rural areas .. ..			
Urban areas with populations of under 50,000	?	?	37				
Rural areas .. ..			37	<b>WALES</b>			
				Regions:			
<b>MIDLANDS AND EASTERN</b>				Wales I and II .. ..	1,621	5.2	85
Regions:							
North Midland .. ..	1,770	2.5	45	Urban areas with populations of 100,000 and over	?	?	91
Midland .. ..	1,661	3.6	59	Urban areas with populations of 50,000 and under	?	?	74
Eastern .. ..	1,955	2.4	47	100,000 .. ..	?	?	75
Total .. ..	1,776	2.9	52	Urban areas with populations of under 50,000 ..	?	?	97
				Rural areas .. ..			

**Table LXXIV.—Meningococcal Infections : Notifications and deaths, 1931 to 1951**

Year	Number of notifications (partially corrected)	Number of deaths	Year	Number of notifications (a) original (b) corrected†	Number of deaths
1931 .. ..	2,216	1,446	1944 .. ..	(a) 2,982 (b) 2,306	592
1932 .. ..	2,136	1,218	1945 .. ..	(a) 2,739 (b) 2,060	555
1933 .. ..	1,695	946	1946 .. ..	(a) 2,673 (b) 2,010	509
1934 .. ..	1,094	732	1947 .. ..	(a) 3,146 (b) 2,282	534
1935 .. ..	883	619	1948 .. ..	(a) 2,024 (b) 1,216	300
1936 .. ..	994	638	1949 .. ..	(a) 1,619 (b) 942	288
1937 .. ..	1,140	701	1950 .. ..	(a) 1,747 (b) 1,149	283
1938 .. ..	1,288	655	1951 .. ..	(a) 1,964 (b) 1,390	298
1939 .. ..	1,500	517			
1940 .. ..	12,771	2,584			
1941 .. ..	11,077	2,163			
1942 .. ..	6,029	1,206			
1943 .. ..	3,303	780			

† Corrected notifications (1944–1951) exclude cases in Port Health Districts.

**Table LXXV.—Acute Poliomyelitis : Notification rates per 100,000 living and deaths per 100 cases by sex and age, 1951**

		Notification* rate per 100,000 living						Deaths per 100 notifications*	
		Paralytic		Non-paralytic		Total			
		M.	F.	M.	F.	M.	F.	M.	F.
0-	..	9	9	4	1	12	11	9	6
1-	..	18	19	5	4	24	23	5	5
3-	..	14	14	10	6	24	20	5	6
5-	..	10	8	12	6	22	15	5	5
10-	..	5	4	8	5	13	9	2	5
15-	..	4	4	4	3	8	6	9	10
25 and over.		1	1	1	1	2	2	19	17
All ages ..		4	3	3	2	7	5	8	8

\* Corrected notifications, excluding cases in Port Health Districts.



Table LXXVI.—Poliomyelitis : Notification and death rates and fatality ratios in Standard Regions and Population Density Aggregates within Regional Groups, 1951

Area	Notification rates per 100,000 living	Deaths per 1,000 notifications	Death rate per million living	Area	Notification rates per 100,000 living	Deaths per 1,000 notifications	Death rate per million living
<b>ENGLAND AND WALES</b>				<b>MIDLANDS AND EASTERN (contd.)</b>			
Conurbations .. .. .	6.0	83	5	Conurbation:			
Areas outside conurbations	4.4	82	4	West Midland .. .. .	4.1	120	5
Urban areas with populations of 100,000 and over	6.9	84	6				
Urban areas with populations of 50,000 and under	8.4	66	6	<b>Areas outside conurbation:</b>			
100,000 .. .. .	7.2	62	4	Urban areas with populations of 100,000 and over	?	?	6
Urban areas with populations under 50,000	6.4	91	6	Urban areas with populations of 50,000 and under	?	?	7
Rural areas .. .. .	6.4	102	7	100,000 .. .. .	?	?	4
				Urban areas with populations under 50,000	?	?	5
				Rural areas .. .. .			
<b>NORTH OF ENGLAND</b>				<b>GREATER LONDON</b>			
Regions:				.. .. .	4.7	44	2
Northern .. .. .	5.1	87	4				
East and West Ridings .. .. .	8.7	59	5				
North Western .. .. .	4.4	127	6				
Total .. .. .	5.9	89	5	<b>SOUTH OF ENGLAND</b>			
				Regions:			
<b>Conurbations:</b>				Remainder of South East .. .. .	6.0	116	7
Tyneside .. .. .	4.0	212	8	Southern .. .. .	6.1	85	5
West Yorkshire .. .. .	5.4	55	3	South Western .. .. .	5.5	161	9
South East Lancashire .. .. .	2.9	159	5				
Merseyside .. .. .	5.2	139	7	Total .. .. .	5.9	121	7
Total .. .. .	4.2	125	5	Urban areas with populations of 100,000 and over	?	?	7
				Urban areas with populations of 50,000 and under	?	?	2
<b>Areas outside conurbations:</b>				100,000 .. .. .	?	?	8
Urban areas with populations of 100,000 and over	?	?	5	Urban areas with populations under 50,000	?	?	8
Urban areas with populations of 50,000 and under	?	?	5	Rural areas .. .. .			
100,000 .. .. .	?	?	4				
Urban areas with populations under 50,000	?	?	7	<b>WALES</b>			
Rural areas .. .. .	?	?		Regions:			
				Wales I and II .. .. .	5.2	119	6
<b>MIDLANDS AND EASTERN</b>							
Regions:				Urban areas with populations of 100,000 and over	?	?	2
North Midland .. .. .	7.1	62	4	Urban areas with populations of 50,000 and under	?	?	—
Midland .. .. .	6.9	69	5	100,000 .. .. .	?	?	9
Eastern .. .. .	4.9	118	6	Urban areas with populations under 50,000	?	?	6
				Rural areas .. .. .			
Total .. .. .	6.4	77	5				

**Table LXXVII.—Acute Infectious Encephalitis: Notifications and deaths, 1931 to 1951**

Year	Number of notifications†	Number of deaths			
		Acute form	Sequelæ	Unspecified	Total
1931.. ..	654	?	?	?	771
1932.. ..	564	?	?	?	662
1933.. ..	432	?	?	?	654
1934.. ..	411	?	?	?	632
1935.. ..	329	?	?	?	579
1936.. ..	269	?	?	?	574
1937.. ..	217	?	?	?	599
1938.. ..	194	?	?	?	516
1939.. ..	159	37	223	312	572
1940.. ..	211	49	356	324	729
1941.. ..	191	36	363	305	704
1942.. ..	148	29	330	231	590
1943.. ..	109	20	304	171	495
1944.. ..	(a) 88 (b) 79	14	244	159	417
1945.. ..	(a) 93 (b) 76	32	288	141	461
1946.. ..	(a) 90 (b) 78	33	314	90	437
1947.. ..	(a) 84 (b) 68	73	259	94	426
1948.. ..	(a) 36 (b) 30	80	192	101	373
1949.. ..	(a) 56 (b) 49	65	194	103	362
		Acute infectious encephalitis (082)	Late effects of acute inf. encephalitis (083)	Total	
1949*	(a) 56 (b) 49	198	171	369	
1950*§	(a) 276 (b) 253	115	250	365	
1951*§	(a) 321 (b) 312	118	216	334	

\* Deaths according to the 6th (1948) Revision of International List. Throughout the rest of the table deaths are according to the 5th (1938) Revision.

† (a) Original; (b) corrected, except in Port Health Districts. Up to 1943 notifications are partially corrected.

§ Notifications of acute infective encephalitis and post-infectious encephalitis.



**Table LXXVIII.—Acute Infectious Encephalitis (including late effects):  
Death rates per million living by sex and age, 1951**

Age (l.b.d.)							Death rate per million living	
							Males	Females
0-	...	...	...	...	...	...	11	12
5-	...	...	...	...	...	...	3	0
15-	...	...	...	...	...	...	5	5
45-	...	...	...	...	...	...	12	12
65 and over	...	...	...	...	...	...	12	13
All ages	...	...	...	...	...	...	7	8

**Table LXXIX.—Measles : Notification rates per 100,000 living and  
deaths per 1,000 notifications by sex and age, 1951**

			Notifications* per 100,000 living		Deaths per 1,000 notifications*	
			Males	Females	Males	Females
0-	...	...	3,058	3,195	4.4	4.9
1-	...	...	9,742	9,646	1.0	0.6
3-	...	...	12,057	11,995	0.3	0.2
5-	...	...	7,372	7,480	0.1	0.1
10-	...	...	483	552	0.4	0.1
15 and over	...	...	27	33	2.6	2.5
All ages...	...	...	1,488	1,331	0.6	0.5

\*Fully corrected figures excluding cases in Port Health Districts.

Table LXXX.—Measles : Notification rates and fatality ratios at ages 0-14 years in Standard Regions and Population Density Aggregates, 1951

Area	Notification rate per 1,000 population	Deaths per 1,000 notifications	Death rate per million population	Area	Notification rate per 1,000 population	Deaths per 1,000 notifications	Death rate per million population
<b>ENGLAND AND WALES</b>				<b>MIDLANDS AND EASTERN (contd.)</b>			
Conurbations .. ..	62	0.48	30	Conurbation:	62	0.57	35
Areas outside conurbations	66	0.49	32	West Midland .. ..	..	..	..
Urban areas with populations of 100,000 and over	60	0.47	28				
Urban areas with populations of 50,000 and under	65	0.47	31	<b>Areas outside conurbation:</b>			
100,000 .. ..	55	0.47	26	Urban areas with populations of 100,000 and over	?	?	20
Urban areas with population of under 50,000 ..	62	0.45	28	Urban areas with populations of 50,000 and under	?	?	16
Rural areas .. ..	57	0.51	29	100,000 .. ..	?	?	32
				Urban areas with populations under 50,000 ..	?	?	16
				Rural areas .. ..	?	?	..
<b>NORTH OF ENGLAND</b>							
Regions:				<b>GREATER LONDON</b>	74	0.38	28
Northern .. ..	58	0.71	42	.. ..	..	..	..
East and West Ridings .. ..	59	0.59	35				
North Western .. ..	54	0.57	31				
Total .. ..	57	0.61	34				
				<b>SOUTH OF ENGLAND</b>			
<b>Conurbations:</b>				Regions:			
Tyneside .. ..	57	0.53	30	Remainder of South East .. ..	73	0.37	27
West Yorkshire .. ..	60	0.84	50	Southern .. ..	75	0.25	19
South East Lancashire .. ..	60	0.63	38	South Western .. ..	76	0.34	26
Merseyside .. ..	48	0.48	23				
Total .. ..	57	0.64	36	Total .. ..	75	0.32	24
				Urban areas with populations of 100,000 and over	?	?	38
<b>Areas outside conurbations:</b>				Urban areas with populations of 50,000 and under	?	?	17
Urban areas with populations of 100,000 and over	?	?	30	100,000 .. ..	?	?	16
Urban areas with populations of 50,000 and under	?	?	45	Urban areas with populations of under 50,000 ..	?	?	27
100,000 .. ..	?	?	24	Rural areas .. ..	?	?	..
Urban areas with population of under 50,000 ..	?	?	42				
Rural areas .. ..	?	?	..				
				<b>WALES</b>			
<b>MIDLANDS AND EASTERN</b>				Urban areas with populations of 100,000 and over	54	0.96	52
Regions:				Urban areas with populations of 50,000 and under	?	?	49
North Midland .. ..	58	0.51	30	100,000 .. ..	?	?	..
Midland .. ..	54	0.55	30	Urban areas with populations of under 50,000 ..	?	?	55
Eastern .. ..	49	0.23	12	Rural areas .. ..	?	?	57
Total .. ..	54	0.46	25				



**Table LXXXI.—Smallpox Epidemic at Brighton : December, 1950–January, 1951. Vaccination state of confirmed cases**

Vaccination state after exposure to smallpox*	Vaccination state before exposure to smallpox*							
	Never vaccinated		Vaccinated only in infancy		Revaccinated after infancy		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Vaccinated .. ..	17	6	4	2	1	—	22†	8‡
Not vaccinated ..	1	1	5	1	1	—	7	2
Total .. ..	18	7§	9	3¶	2**	—	29	10

\* “ No takes ” are included with “ vaccinated ” (see notes † and \*\*).  
† 3 after onset of smallpox, 1 on day of onset, 16 before onset and 2 with day of onset undetermined.  
‡ 2 after onset and 6 before onset (including 2 “ no takes ”).  
§ Ages 17, 20, 28, 28, 38, 43, 48.  
|| None aged under 21.  
¶ Ages 53, 53, and 53.  
\*\* 1 in infancy and 1935 ; 1 in infancy, 1943 and 1949.  
(Source:—Public Health, No. 7, Vol. LXIV (April, 1951) p. 123).

**Table LXXXII.—Proportions of children at ages 1–4 and 5–14 years on 31st December, 1951, who had been immunized against diphtheria in each county and county borough, according to the returns made by local authorities to the Ministry of Health—England and Wales.**

Area	Per cent of population immunized prior to 31.12.51		Area	Per cent. of population immunized prior to 31.12.51	
	1–4	5–14		1–4	5–14
<b>Admin. Counties</b>			<b>Admin. Counties—contd.</b>		
Bedfordshire .. ..	69	76	Wiltshire .. ..	60	81
Berkshire .. ..	65	69	Worcestershire .. ..	63	73
Buckinghamshire .. ..	70	74	Yorkshire, East Riding ..	56	70
Cambridgeshire .. ..	74	76	Yorkshire, North Riding ..	61	61
Cheshire .. ..	51	62	Yorkshire, West Riding ..	55	69
Cornwall .. ..	62	62			
Cumberland .. ..	66	87	<b>ENGLAND, Admin.</b>		
Derbyshire .. ..	50	79	<b>Counties TOTAL..</b>	<b>61</b>	<b>75</b>
Devon .. ..	63	85			
Dorset .. ..	87	80	Anglesey .. ..	62	79
Durham .. ..	50	70	Brecknockshire .. ..	60	67
Ely, Isle of .. ..	48	13	Caernarvonshire .. ..	70	71
Essex .. ..	61	78	Cardiganshire .. ..	55	77
Gloucestershire .. ..	59	76	Carmarthenshire .. ..	62	94
Herefordshire .. ..	57	88	Denbighshire .. ..	64	88
Hertfordshire .. ..	58	66	Flintshire .. ..	59	82
Huntingdonshire .. ..	62	68	Glamorganshire .. ..	61	87
Kent .. ..	64	81	Merionethshire .. ..	72	73
Lancashire .. ..	61	76	Monmouthshire .. ..	55	68
Leicestershire .. ..	63	86	Montgomeryshire .. ..	77	89
Lincs., Holland .. ..	60	91	Pembrokeshire .. ..	55	86
Lincs., Kesteven .. ..	50	77	Radnorshire .. ..	55	68
Lincs., Lindsey .. ..	54	59			
London .. ..	64	81	<b>WALES, Admin. Counties</b>		
Middlesex .. ..	63	79	<b>TOTAL .. ..</b>	<b>61</b>	<b>82</b>
Norfolk .. ..	55	79			
Northamptonshire .. ..	61	77	<b>ENGLAND and WALES,</b>		
Northumberland .. ..	65	88	<b>Admin. Counties</b>		
Nottinghamshire .. ..	68	82	<b>TOTAL .. ..</b>	<b>61</b>	<b>76</b>
Oxfordshire .. ..	66	61			
Peterborough, Soke of ..	50	70	<b>County Boroughs</b>		
Rutlandshire .. ..	53	78	Barnsley .. ..	62	94
Shropshire .. ..	61	76	Barrow-in-Furness .. ..	54	65
Somerset .. ..	63	75	Bath .. ..	53	60
Southampton .. ..	65	66	Birkenhead .. ..	49	68
Staffordshire .. ..	50	79	Birmingham .. ..	70	99
Suffolk, East .. ..	63	41	Blackburn .. ..	61	93
Suffolk, West .. ..	65	48	Blackpool .. ..	60	85
Surrey .. ..	64	82	Bolton .. ..	55	74
Sussex, East .. ..	73	84	Bootle .. ..	56	68
Sussex, West .. ..	59	73	Bournemouth .. ..	75	85
Warwickshire .. ..	57	63	Bradford .. ..	55	65
Westmorland .. ..	67	78	Brighton .. ..	61	42
Wight, Isle of .. ..	52	67			



Table LXXXII.—*contd.*

Area	Per cent of population immunised prior to 31.12.51		Area	Per cent of population immunised prior to 31.12.51	
	1-4	5-14		1-4	5-14
<b>County Boroughs—<i>contd.</i></b>			<b>County Boroughs—<i>contd.</i></b>		
Bristol .. ..	59	73	St. Helens .. ..	51	76
Burnley .. ..	59	73	Salford .. ..	86	96
Burton-upon-Trent ..	46	95	Sheffield .. ..	67	90
Bury .. ..	56	74	Smethwick .. ..	74	96
Canterbury .. ..	64	63	Southampton .. ..	52	69
Carlisle .. ..	81	90	Southend-on-Sea .. ..	47	46
Chester .. ..	45	94	Southport .. ..	76	92
Coventry .. ..	50	73	South Shields .. ..	70	85
Croydon .. ..	63	70	Stockport .. ..	66	87
Darlington .. ..	50	61	Stoke-on-Trent .. ..	56	49
Derby .. ..	57	89	Sunderland .. ..	45	59
Dewsbury .. ..	52	72	Tynemouth .. ..	60	88
Doncaster .. ..	47	65	Wakefield .. ..	58	72
Dudley .. ..	57	92	Wallasey .. ..	59	60
Eastbourne .. ..	46	78	Walsall .. ..	38	89
East Ham .. ..	63	69	Warrington .. ..	49	87
Exeter .. ..	69	81	West Bromwich .. ..	57	85
Gateshead .. ..	50	66	West Ham .. ..	54	85
Gloucester .. ..	52	69	West Hartlepool .. ..	39	93
Great Yarmouth .. ..	67	58	Wigan .. ..	52	73
Grimsby .. ..	54	67	Wolverhampton .. ..	40	76
Halifax .. ..	68	70	Worcester .. ..	63	71
Hastings .. ..	73	50	York .. ..	58	68
Huddersfield .. ..	61	90			
Ipswich .. ..	60	87	<b>ENGLAND, County</b>		
Kingston-upon-Hull ..	70	78	<b>Boroughs TOTAL ..</b>	<b>60</b>	<b>79</b>
Leeds .. ..	72	94			
Leicester .. ..	60	85	Cardiff .. ..	88	82
Lincoln .. ..	53	99*	Merthyr Tydfil .. ..	50	91
Liverpool .. ..	47	78	Newport (Mon.) .. ..	67	78
Manchester .. ..	67	82	Swansea .. ..	54	90
Middlesbrough .. ..	56	78			
Newcastle-upon-Tyne ..	66	81	<b>WALES, County</b>		
Northampton .. ..	58	81	<b>Boroughs TOTAL ..</b>	<b>71</b>	<b>84</b>
Norwich .. ..	53	65			
Nottingham .. ..	65	83	<b>ENGLAND and WALES,</b>		
Oldham .. ..	54	33	<b>County Boroughs</b>		
Oxford .. ..	71	98	<b>TOTAL .. ..</b>	<b>61</b>	<b>80</b>
Plymouth .. ..	59	85			
Portsmouth .. ..	66	91	<b>ENGLAND and WALES..</b>	<b>61</b>	<b>77</b>
Preston .. ..	63	83			
Reading .. ..	65	75			
Rochdale .. ..	57	94			
Rotherham .. ..	52	78			

\* No allowance has been made in respect of children living outside the city but immunized while attending schools there (Lincoln C. B.).

**Table LXXXIII.—Comparative rates of diphtheria notifications and deaths in 1951, per 100,000 children who were returned as having been immunized and as not having been immunized before the end of 1951—England and Wales.**

	1-4	5-14	All ages under 15
<b>Immunized</b>			
Number of children .. .. .	1,868,633	4,722,201	6,656,045
Number of corrected notifications ..	42	83	126
Number of deaths .. .. .	—	1	1
Rates :—			
Notified cases per 100,000 ..	2	2	2
Deaths per 100 cases .. ..	—	1	1
<b>Not immunized</b>			
Number of children .. .. .	1,208,060	1,414,970	3,231,819
Number of corrected notifications ..	120	230	359
Number of deaths .. .. .	5	17	23
Rates :—			
Notified cases per 100,000 ..	10	16	11
Deaths per 100 cases .. ..	4	7	6



# TUBERCULOSIS

## Respiratory tuberculosis—morbidity

The notification rates by sex and age for tuberculosis of the respiratory system in England and Wales are shown in Table LXXXIV (page 163). The introduction of mass radiography, improved chest clinic facilities and a better public attitude toward the disease has so improved the efficiency of case-finding that the rates for the years following the 1939-45 war are not comparable with those of earlier years. It is doubtful whether the incidence of disease was in fact higher in 1951 than in 1938 and considerable evidence is available (e.g. Lowe C. R., and Geddes J. E., 1953\*) to indicate that the notification rates have been sustained at their higher levels by more efficient case-finding and earlier diagnosis. Notwithstanding this factor, however, the rates have tended to fall at most ages since 1948 ; more consistently so for females than for males.

The sex and age differentials are important. At ages under 15 notification rates are now much higher than ten years ago as a result of wider recognition of the clinical reactions to primary tuberculous infection and a greater tendency to notify such cases in order to secure precautionary observation.

The adolescent and young adult is most vulnerable to respiratory tuberculosis and the notification rate at ages 15-24 responds quickly to changes in the balance of, on the one hand, forces of infection and, on the other hand, innate resistance and environmental influences. During the war years the notification rates for both sexes in this age group rose first as a reflection of adverse war conditions but later also as a result of improved case-finding, but it is not possible to separate the effects of these two factors. In males there has been some considerable improvement from the peak of 1948, when the rate was 52 per cent above the 1938 figure, but in 1951 there was an upward fluctuation. This was a year of higher than average prevalence of non-tuberculous respiratory infection, especially of influenza, which may have had some exacerbating effect upon early cases of tuberculosis. It must also be borne in mind that the intensity of case-finding further increased in 1951 and may have affected males more than females.

With regard to the possible effect of epidemic influenza it is noteworthy that the only region in which the rise in notifications of respiratory tuberculosis in males in this 15-24 age group was statistically significant was the North Western Region, the main contributors being Bolton (11 in 1950 increasing to 16 in 1951), Bootle (14 to 21), Liverpool (123 to 170), Manchester (73 to 80), and Warrington (5 to 8). There were increases in the London and South Eastern Region mainly in East Ham (10 to 17) and West Ham (13 to 24), the South Western Region (Bristol 43 to 71), and Wales (Newport 14 to 24), but they were not statistically significant (except for Bristol as an individual town). Other regions taken as a whole experienced decreases in notifications though there were minor upward fluctuations of no significance in some towns, the exception being Sunderland where the rise was very large from 19 to 45.

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\* Lowe, C. R., and Geddes, J. E. (1953), *Brit. J. of Prev. and Soc. Med.*, 7, 227.

With regard to the effect of improved case-finding, the numbers of examinees found as a result of mass radiography to be suffering from active post-primary respiratory tuberculosis in 1950 and 1951 were\* :

Age	Males			Females		
	1950	1951	Increase	1950	1951	Increase
14 ... ..	30	33	3	59	56	-3
15-24 ... ..	578	656	78	1,095	1,283	188
25-34 ... ..	860	989	129	649	729	80
35-44 ... ..	552	714	162	257	319	62
45 and over ...	989	1,096	107	190	242	52
Total ...	3,009	3,488	479	2,250	2,629	379

\* Ministry of Health (1951, 1952, 1953). Annual Reports of Chief Medical Officer, 1949, 1950, 1951, H.M.S.O.

The increase in case-finding in 1951 by mass radiography, while greater for males than for females when all ages are taken together, is actually less for males than for females in the 15-24 age group. This particular aspect of case-finding does not appear to offer an explanation of the differential trend. It is however difficult to draw conclusions from these figures, interesting though they are, for the extent to which they represent real increases in new cases or merely represent cases which would otherwise have been detected by alternative sources of diagnosis is not known, nor whether this factor operates differently in the two sexes.

In females the post-war notification trend has not been so favourable as for males. The rate for ages 15-24 reached a maximum in 1948 at a figure 38 per cent above that for 1938 and though there has been a downward trend since that year, the improvement has not been substantial. At ages 25-34 the contrast is even greater than at 15-24 between a downward trend for men, with probable recovery of ground lost by the war, and persistence of raised morbidity in women.

At ages over 35 the more chronic course of the disease in males is more clearly demonstrated. In women there has been only a very slight tendency for rates of notification at older ages to decline ; the rates are already relatively low in these age groups, for most women who contract tuberculosis do so before the age of 35. In men there was a downward trend at ages 35-64 between 1943 and 1947. This trend was arrested in 1948 and at ages 65 and over notifications have been considerably higher since 1948 than for many years.

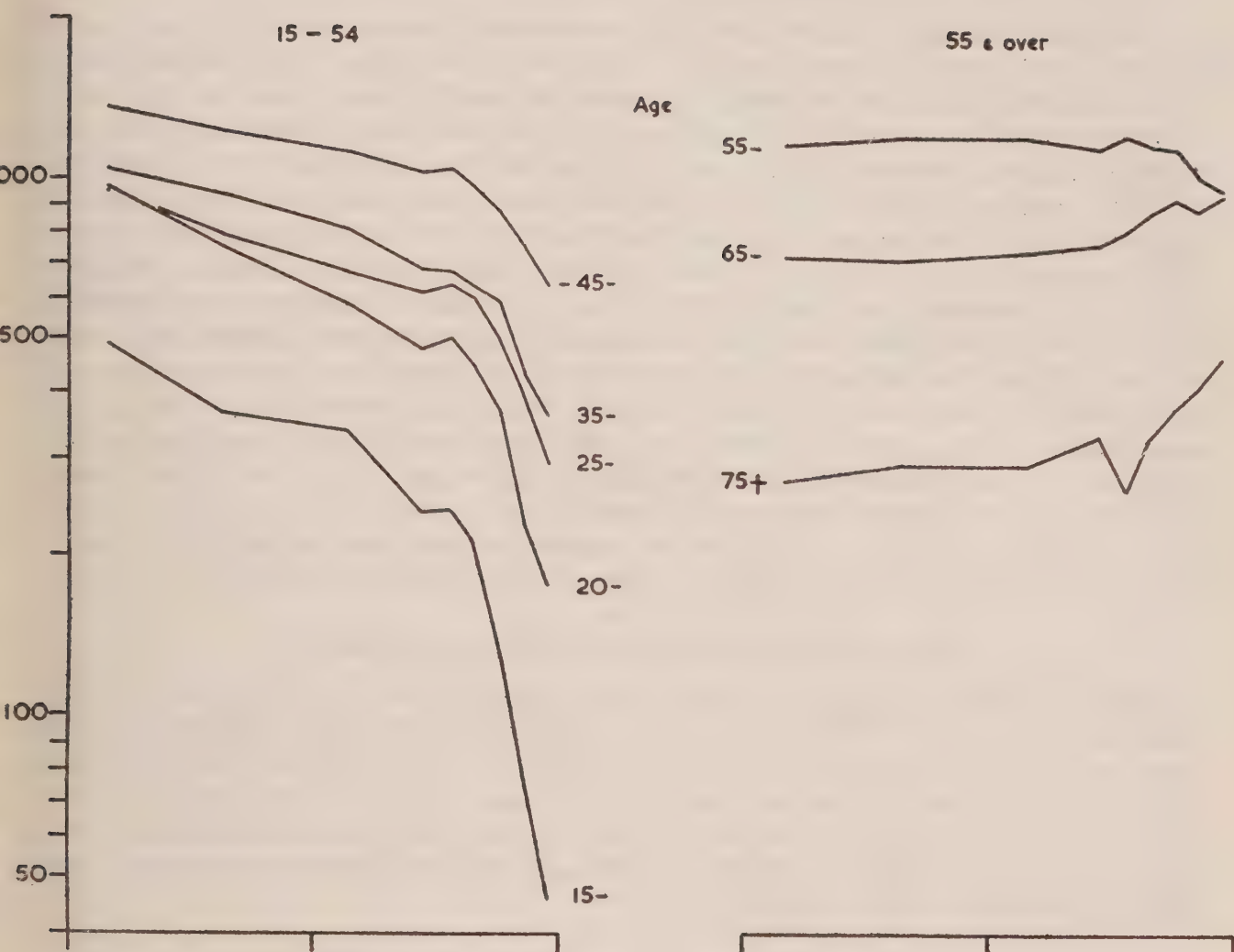
**Respiratory tuberculosis—mortality**

Death rates from respiratory tuberculosis by sex and age are shown in Table LXXXV (page 164). In 1950 deaths were classified on the basis of the 6th Revision of the International List and in order to show the effect of the new classification the 1949 rates have been shown according to both the 5th and 6th Revisions. The relatively minor change involved is the inclusion under respiratory tuberculosis in the new classification of pleurisy or pleural effusion without stated cause, which was formerly assigned to the non-tuberculous respiratory group of causes but which is now assumed to be tuberculous for purposes of classification. Pleural effusion without specific statement of cause is not numerically important at younger ages, since death is extremely unlikely to occur before the diagnosis of tuberculosis has been confirmed or

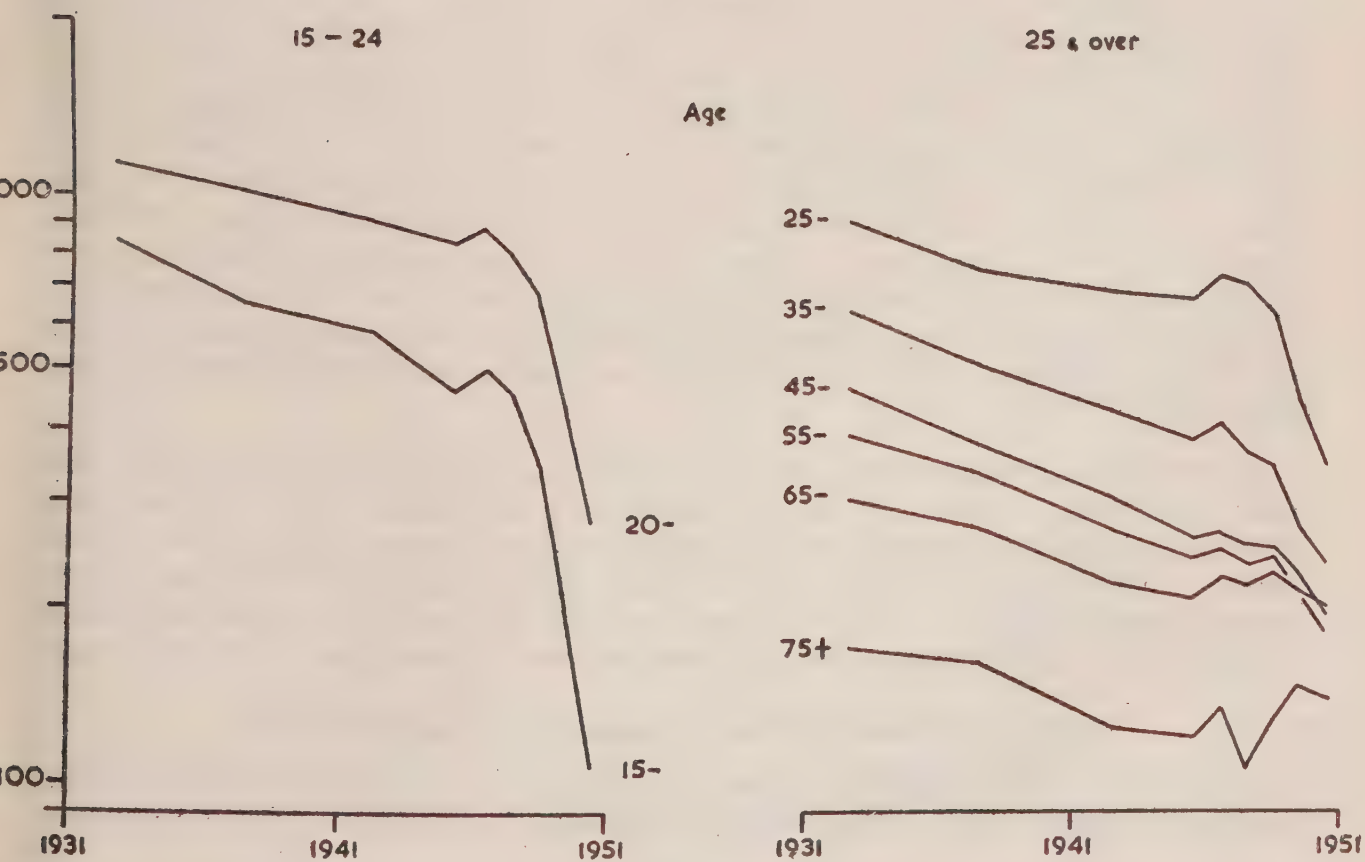


# Diagram 2

MALES



FEMALES



Respiratory tuberculosis: Death rates per million living, by sex and age, England and Wales, 1931-51

excluded, but at older ages pleurisy is more often mentioned on death certificates without reference to specific cause.

The rapid decline in mortality from respiratory tuberculosis at young and middle ages, which began in 1948, continued in 1951. This represents a greater acceleration in the secular decline in death rates than has yet been experienced. The trends are illustrated in Diagram 2 for age groups over 15. In both men and women the rate at ages 20–24 in 1951 was about one third that of 1947 ; and at ages 25–34 it was, for both sexes, less than one half ; while at higher ages the reduction becomes progressively less, even up to age 65 the improvement is substantial. At more advanced ages there has been, especially for males, a tendency for death rates to rise. Whether this increase in mortality is wholly real or whether it is in part due to more accurate certification as a result of more extensive radiology, better methods of bacillary investigation and increased post-mortem discovery of long standing lesions is a matter for speculation. It may be in part an inevitable consequence of the postponement of deaths of the tuberculous from earlier to later ages or of the advancement into old age of a more susceptible generation. As will be seen from Table LXXXVI (page 164) the C.M.I. for respiratory tuberculosis has fallen, for men, from 1·38 in 1931 to 0·58 in 1951 ; and, for women, from 1·47 to 0·46.

### **Non-respiratory tuberculosis—morbidity**

Table LXXXVII (page 165) shows notification rates for non-respiratory disease in recent years. There has been a persistent decline in notifications at all ages and in the short period since 1938, taking all ages together, the rates have been almost halved. The real incidence of non-respiratory tuberculosis is not accurately measured by the notification rate as notification is seriously defective and the proportion of total cases notified may vary in different age groups ; but the improvement is not doubted.

### **Non-respiratory tuberculosis—mortality**

Table LXXXVIII (page 165) gives death rates for non-respiratory tuberculosis, by sex and age, and separates tuberculosis of the meninges and central nervous system from other non-respiratory tuberculosis. Tuberculous meningitis was invariably fatal prior to the introduction of streptomycin and the sharp fall in mortality in 1948 reflects the extended use of streptomycin. The halving of the death rate by 1950 in such a serious condition for which there was no alternative treatment must be considered as a spectacular achievement. The lack of much further improvement between 1950 and 1951 suggests that the effect of antibiotic treatment has a limit set by the number of cases in which diagnosis can be established in time to administer adequate antibiotic therapy and in which the reaction to such treatment is favourable. The vital problem is still the oldest one, to prevent primary infection or to protect against it. The decline in mortality from other forms of non-respiratory tuberculosis has continued.

More detail is provided by Table LXXXVI (page 164) which gives C.M.I.'s for four site groups of non-respiratory tuberculosis from 1931 to 1951 for each sex. Mortality from tuberculosis of the intestines, peritoneum etc., so often associated with bovine infection, was in 1951 about one-eighth of what it was twenty years earlier. Over the same period the index for mortality from tuberculosis of bones and joints has been reduced to one-fifth of the 1931 value.

### **Regional distribution of respiratory tuberculosis**

Table LXXXIX (page 166) shows the notification rates by sex and age in the standard regions and in the county boroughs and administrative counties.



Respiratory disease generally and especially respiratory tuberculosis is more prevalent in the town than in the country and particularly affects those urban areas where there are large concentrations of workers and crowded housing conditions ; but in such urban areas diagnostic facilities are often better than elsewhere and thus differences in notification rates may be accentuated. Higher average notification rates than for England and Wales as a whole are exhibited by the London and South Eastern region (dominated by the dense urbanisation of London), the Northern region and Wales. In the Northern region there is an excess in males at all ages under 65, but more especially in females, particularly of the younger and more vulnerable age groups. In Wales the excess is mainly in females in all age groups above the age of 15, and in males between 15 and 45. In London and the South Eastern region the excess is, in contrast, mainly in males of all ages with younger females showing some excess but less than in the other two regions with above average notification rates. This difference in the direction of the excess may indicate that whereas in the North and in Wales there is real excess in morbidity, in London the excess is largely due to more extensive diagnostic services resulting in more tuberculosis being discovered. The corresponding death rates are shown in Table XC (page 172). Mortality is above the average in the Northern region and in Wales, and also in the North Western and Midland regions which had no excess of notifications, while on the other hand the mortality in London and the South East was not excessive (except at advanced ages in London). This would seem to indicate a lack of comparability in notification rates in different parts of the country and to confirm that the higher recorded morbidity in London and the South East may be more apparent than real.

The high mortality is mainly attributable in the Northern and North Western regions to the Tyneside and Merseyside conurbations and in the Midlands to the West Midland conurbation, though the larger towns also contribute in some measure to these regional excesses ; the mortality rates for the other density aggregates, i.e., for smaller towns and rural areas, are not so markedly or consistently above national averages. In Wales, by contrast, the mortality is considerably above average in each density aggregate.

The summary on page 162 indicates the larger towns with palpably high or low mortality rates for respiratory tuberculosis. High mortality (persons, all ages) for this purpose, has been arbitrarily defined as exceeding 450 per million ; and low mortality as less than 200 per million. This summary has been restricted to county boroughs since comparisons of administrative counties are rendered difficult by the differing levels of urbanisation.

A final column in Table XC (page 172) indicates by the ratio of notified cases to deaths the extent to which either results of treatment vary or, more probably, notification varies in completeness. It seems very likely that where diagnostic facilities, as supplemented by mass radiography, are more extensive or public attitude to the disease is more alert, notification is extended to a greater proportion of minimal or less active types of lesion than elsewhere.

### **Regional distribution of non-respiratory tuberculosis**

The notification of non-respiratory tuberculosis is not only known to be considerably incomplete but varies in completeness in different parts of the country. Comparison between areas has to be carried out on the basis of mortality rates, deficient though this method may be owing to the possible geographical differential in the secular decline in the fatality of the disease. Since mortality is much heavier in children than in adults (approximately

Region and County Borough							Death rate from respiratory tuberculosis per million living, 1951		
							Males	Females	Persons
High mortality									
Northern...	...	...	...	Sunderland	...	...	635	306	463
North Western	...	...	...	Liverpool	...	...	668	375	512
				Bootle	...	...	606	388	493
				Salford	...	...	646	291	461
				Manchester	...	...	606	316	452
North Midland...	...	...	...	Grimsby	...	...	738	248	487
Midland	...	...	...	Walsall	...	...	737	348	541
				Smethwick	...	...	782	222	484
				Wolverhampton	...	...	661	303	479
Low mortality									
East and West Ridings			...	Huddersfield	...	...	111	151	132
				York	...	...	177	183	180
North Western	...	...	...	Bury	...	...	108	162	136
Eastern	...	...	...	Ipswich	...	...	221	55	134
London and South Eastern	...			Brighton	...	...	245	138	185
South Western	...	...	...	Bath	...	...	296	88	177
				Exeter...	...	...	268	119	185

40 per cent of the deaths were under age 15) and because deaths in children represent more recent disease than the long standing lesions involved in older persons whose deaths are assigned to non-respiratory tuberculosis, the index chosen was the death rate at ages 0-14. Table XCI (page 177) shows the rate for each standard region, county borough and administrative county, separated into two parts—the mortality attributable to tuberculous meningitis and to other non-respiratory tuberculosis. The numbers of deaths involved are small and few of the figures for individual areas are significant. In 1951 mortality from tuberculous meningitis was higher than average in the Northern, North Western and Midland regions of the country and in Wales and lower than average in the London and South Eastern, Southern and South Western regions. Mortality from other forms of tuberculosis, which are associated not only with human but with bovine sources of infection, shows less variation but is on the whole above average in the Northern region and Wales and low in the London and South Eastern, Southern and South Western regions.



**Table LXXXIV.—Tuberculosis of respiratory system : Notification rates per 100,000 living by sex and age, 1938 to 1951**

		All ages	0—	5—	15—	25—	35—	45—	65 and over
<b>Males</b>									
1938	...	108	20	42	141	137	136	136	52
1939	...	98	17	32	132	124	124	125	46
1940	...	104	17	29	145	146	128	123	43
1941	...	115	20	33	154	155	148	141	50
1942	...	117	22	38	165	148	153	142	49
1943	...	119	27	40	166	144	154	152	50
1944	...	122	30	41	180	158	142	149	56
1945	...	118	32	40	178	160	135	142	53
1946	...	119	32	46	179	174	125	138	54
1947	...	118	40	53	193	163	116	137	56
1948	...	117	44	51	215	161	117	139	64
1949	...	119	46	49	180	159	122	146	68
1950	...	111	53	49	159	154	107	135	67
1951	...	115	53	48	171	157	117	140	73
<b>Females</b>									
1938	...	77	18	42	175	129	72	42	19
1939	...	71	15	33	166	116	68	37	18
1940	...	70	17	30	168	120	66	35	16
1941	...	76	19	33	185	126	69	41	19
1942	...	78	20	34	204	130	70	37	18
1943	...	83	26	40	209	142	73	40	18
1944	...	86	26	40	227	150	75	38	16
1945	...	81	26	41	223	140	69	34	16
1946	...	80	28	49	213	141	65	35	16
1947	...	83	33	51	235	146	66	35	17
1948	...	86	46	58	244	151	68	35	17
1949	...	85	44	53	238	155	71	35	17
1950	...	82	43	52	238	152	69	31	16
1951	...	81	50	52	228	150	68	33	16

Table LXXXV.—Tuberculosis of respiratory system : Death rates per million living by sex and age, 1931–45 and 1946 to 1951

	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75 and over
<b>Males</b>											
1931–35	85	42	64	490	963	961	1,140	1,368	1,176	723	275
1936–40	61	20	44	366	742	785	937	1,210	1,216	718	296
1941–45	76	24	34	339	581	674	811	1,114	1,203	741	295
1946	68	22	23	239	481	615	687	1,020	1,165	768	340
1947	77	15	29	241	500	632	679	1,034	1,213	812	267
1948	56	10	14	211	445	603	633	961	1,166	881	334
1949	33	6	13	127	368	496	591	869	1,153	927	380
1949*	34	7	14	127	366	497	592	869	1,159	937	400
1950*	38	9	8	78	229	395	428	751	1,024	891	411
1951*	30	7	7	46	174	294	361	632	972	958	465
<b>Females</b>											
1931–35	74	43	143	840	1,138	911	646	475	394	306	170
1936–40	55	24	98	658	1,016	759	511	377	339	272	160
1941–45	72	24	76	591	916	692	427	304	269	220	123
1946	60	25	69	468	842	662	382	261	242	207	119
1947	70	24	63	502	899	730	411	267	249	224	133
1948	52	19	53	462	812	702	367	255	235	218	105
1949	33	9	30	349	684	622	348	253	245	229	127
1949*	33	10	30	351	682	622	348	254	249	236	139
1950*	29	8	15	199	429	444	273	229	212	212	144
1951*	25	8	14	107	279	348	237	193	180	198	137

\* According to the 6th (1948) Revision of the International List. Throughout the rest of the table rates are according to the 5th (1938) Revision.

Table LXXXVI.—Tuberculosis : Comparative Mortality Indices for various sites, 1931 to 1951

		All forms		Respira- tory		Meninges and C.N.S.		Intestines, perito- neum, etc.		Bones and joints		Other forms	
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1931	...	1.39	1.47	1.38	1.47	1.44	1.39	1.75	1.91	1.53	1.72	1.24	1.23
1932	...	1.30	1.38	1.27	1.36	1.38	1.28	1.78	1.65	1.45	1.88	1.28	1.34
1933	...	1.29	1.34	1.29	1.35	1.21	1.18	1.50	1.72	1.46	1.52	1.19	1.10
1934	...	1.20	1.24	1.19	1.24	1.22	1.22	1.34	1.45	1.41	1.56	1.07	1.12
1935	...	1.13	1.16	1.13	1.18	1.10	1.01	1.23	1.31	1.29	1.39	0.97	0.98
1936	...	1.09	1.10	1.09	1.11	1.06	1.00	1.08	1.23	1.21	1.33	1.02	0.95
1937	...	1.08	1.12	1.08	1.12	1.04	1.02	1.19	1.09	1.12	1.24	1.04	1.12
1938	...	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1939	...	1.01	0.99	1.02	1.00	0.92	0.93	0.96	0.92	1.05	1.14	0.98	0.93
1940	...	1.18	1.08	1.22	1.09	1.06	1.07	1.09	1.05	1.10	0.99	0.92	1.05
1941	...	1.28	1.11	1.36	1.09	1.42	1.37	1.27	1.00	1.03	1.11	1.32	1.12
1942	...	1.19	0.99	1.27	0.97	1.20	1.13	1.27	1.08	1.30	1.06	1.13	0.99
1943	...	1.26	0.98	1.33	0.96	1.13	1.14	1.02	0.96	1.22	0.99	1.14	0.98
1944	...	1.21	0.92	1.27	0.91	1.05	1.02	0.97	0.81	1.05	0.94	1.11	1.00
1945	...	1.17	0.92	1.23	0.91	1.01	1.04	0.93	0.71	1.01	0.81	1.08	0.92
1946	...	0.94	0.86	0.97	0.86	0.88	0.89	0.69	0.53	0.69	0.80	0.81	0.86
1947	...	0.90	0.89	0.93	0.92	0.81	0.81	0.56	0.62	0.58	0.66	0.83	0.86
1948	...	0.83	0.82	0.87	0.85	0.64	0.70	0.45	0.51	0.54	0.65	0.70	0.68
1949	...	0.76	0.72	0.80	0.77	0.55	0.56	0.39	0.37	0.39	0.48	0.64	0.49
1950	...	0.62	0.55	0.66	0.58	0.42	0.48	0.23	0.25	0.38	0.39	0.47	0.44
1951	...	0.55	0.45	0.58	0.46	0.43	0.46	0.21	0.24	0.29	0.35	0.43	0.39



**Table LXXXVII.—Tuberculosis, non-respiratory : Notification rates per million living by sex and age, 1938-40, 1941-45 and 1946 to 1951**

		Males					Females				
		All ages	0-	15-	25-	45 & over	All ages	0-	15-	25-	45 & over
1938-40	..	290	744	341	151	72	264	641	403	172	61
1941-45	..	269	698	326	148	64	261	632	413	178	63
1946	..	217	569	250	123	53	210	518	334	149	47
1947	..	202	518	227	114	54	196	455	317	144	51
1948	..	197	505	243	99	53	199	473	333	138	46
1949	..	171	423	211	93	50	174	399	304	127	40
1950	..	151	350	186	93	48	164	343	288	139	39
1951	..	149	327	198	98	47	159	314	299	131	47

**Table LXXXVIII.—Tuberculosis of meninges and central nervous system, and other non-respiratory tuberculosis : Death rates per million living by sex and age, 1938-40, 1941-45 and 1946 to 1951**

		Males							Females						
		All ages	0-	5-	15-	25-	45-	65 & over	All ages	0-	5-	15-	25-	45-	65 & over
		Tuberculosis of meninges and central nervous system													
1938-40	..	45	289	73	41	14	6	2	40	273	77	48	11	4	2
1941-45	..	50	308	87	51	15	6	1	45	282	90	65	14	4	1
1946	..	40	222	80	42	11	7	3	36	199	82	52	12	3	0
1947	..	39	215	68	39	12	8	1	34	184	66	52	11	4	1
1948	..	31	179	47	30	9	7	3	30	166	54	44	10	3	2
1949	..	27	153	40	26	8	5	4	24	126	40	33	10	4	1
1950	..	20	103	32	20	7	7	3	20	116	31	31	6	4	2
1951	..	21	109	30	19	9	5	3	19	102	34	30	8	3	1
		Other non-respiratory tuberculosis													
1938-40	..	69	148	42	85	61	63	60	53	114	35	72	48	40	50
1941-45	..	63	134	40	77	57	58	52	50	101	35	72	45	37	50
1946	..	48	87	24	51	48	50	44	39	64	25	53	38	30	40
1947	..	46	92	29	46	41	48	43	39	65	27	57	37	34	29
1948	..	40	57	20	41	37	49	40	33	56	18	39	31	28	38
1949	..	34	34	15	38	32	42	41	24	33	8	26	24	26	25
1950	..	26	24	10	25	27	31	41	20	20	7	22	16	23	30
1951	..	23	17	5	19	25	30	38	18	15	5	14	13	25	34

Table LXXXIX.—Respiratory tuberculosis : Notification rates per 100,000 living by sex and age for Standard Regions, County Boroughs and Administrative Counties, 1951

Area	Males							Females							Persons
	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-	65 and over	All ages	
England and Wales ..	53	48	171	136	140	73	115	50	52	228	108	33	16	81	97
Standard Regions:															
Northern ..	80	77	195	156	162	62	135	65	94	319	127	35	17	110	122
East and West Ridings ..	53	50	135	117	130	81	103	51	46	201	95	26	12	71	86
North Western ..	55	40	176	136	146	72	115	55	43	224	108	34	14	79	96
North Midland ..	46	38	147	114	97	59	92	47	48	224	98	26	12	75	83
Midland ..	51	58	164	132	152	58	116	53	54	215	95	37	17	79	97
Eastern ..	45	42	115	112	113	60	91	36	48	166	90	32	18	65	78
London and South Eastern	59	52	231	155	155	90	135	55	51	241	117	34	18	86	109
Southern ..	43	24	118	131	131	72	100	34	47	170	93	37	19	68	84
South Western ..	29	39	131	129	127	61	101	33	40	210	107	33	14	73	86
Wales ..	46	50	207	145	140	74	122	40	57	286	136	37	19	99	110



Table LXXXIX.—continued

Area	Males							Females							Persons
	0—	5—	15—	25—	45—	65 and over	All ages	0—	5—	15—	25—	45—	65 and over	All ages	
Administrative Counties:															
Bedfordshire ..	43	56	152	157	141	53	120	53	41	197	94	47	40	80	100
Berkshire ..	54	56	139	144	153	44	116	36	49	157	90	39	27	69	92
Buckinghamshire ..	58	22	131	114	121	80	97	37	61	141	76	40	12	64	80
Cambridgeshire ..	13	56	159	78	76	65	78	63	75	220	89	29	29	80	79
Cheshire ..	9	15	98	85	97	48	69	12	26	116	52	15	11	37	52
Cornwall ..	—	34	98	110	123	50	84	16	37	124	111	30	14	60	71
Cumberland ..	10	63	148	165	179	97	127	78	25	294	184	47	25	119	123
Derbyshire..	32	17	151	96	90	59	80	7	17	139	65	26	5	46	63
Devon ..	37	27	96	89	84	40	69	36	28	157	88	28	13	54	61
Dorset ..	9	11	102	133	122	77	93	9	45	197	89	32	8	62	77
Durham ..	82	78	194	140	153	52	127	69	84	300	113	37	29	107	117
Ely, Isle of ..	48	53	51	79	92	44	68	44	71	121	76	30	20	62	65
Essex ..	43	31	163	120	132	57	102	26	36	193	96	31	12	69	85
Gloucestershire ..	16	36	156	131	114	44	95	6	24	238	116	36	13	73	84
Herefordshire ..	68	94	171	167	124	141	134	87	54	190	102	73	20	86	109
Hertfordshire ..	67	30	142	122	128	76	105	35	49	148	87	26	13	62	82
Huntingdonshire ..	—	53	89	44	68	26	51	—	—	205	80	51	—	59	55
Kent ..	32	52	214	130	131	61	114	45	38	211	93	33	23	71	91
Lancashire ..	47	32	137	116	134	55	99	42	37	197	89	35	11	67	82
Leicestershire ..	22	13	97	123	86	55	81	35	25	173	89	18	5	61	71
Lincolnshire (Parts of	—	24	136	127	26	23	66	—	27	130	101	17	—	54	60
Holland) ..															
Lincolnshire (Parts of	32	32	123	98	75	—	73	—	—	301	96	36	11	73	73
Kesteven) ..															
Lincolnshire (Parts of															
Lindsey) ..	14	29	107	66	98	43	65	14	50	96	61	27	5	46	56
London ..	97	72	272	202	216	135	181	91	68	309	153	44	21	116	146
Middlesex ..	63	50	258	152	141	87	133	54	48	240	107	33	15	83	106

Table LXXXIX.—continued.

Area	Males						Females						Persons		
	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-		65 and over	All ages
<b>Administrative Counties—contd.</b>															
Norfolk ..	45	63	65	59	56	40	57	44	71	123	85	34	13	64	60
Northamptonshire ..	18	22	107	84	58	41	60	16	31	177	61	14	6	48	54
Northumberland ..	57	68	211	147	160	50	129	25	111	192	108	24	8	79	104
Nottinghamshire ..	35	27	104	88	82	69	73	44	47	171	92	19	24	67	70
Oxfordshire ..	15	38	72	106	71	99	77	15	23	101	102	29	31	59	68
Peterborough, Soke of:	50	—	185	135	143	79	108	—	23	310	87	—	40	74	91
Rutland ..	—	—	125	74	38	—	53	—	56	500	33	50	—	65	59
Shropshire ..	36	20	24	53	45	17	36	31	15	67	55	22	6	35	36
Somerset ..	38	18	127	148	107	48	96	46	50	188	79	34	13	65	80
Southampton ..	20	13	84	133	142	53	90	41	30	138	97	46	11	65	78
Staffordshire ..	29	39	118	123	157	65	104	36	42	238	90	40	15	79	91
Suffolk, East ..	49	32	107	157	96	66	97	37	52	89	128	18	34	63	79
Suffolk, West ..	—	37	77	89	44	44	58	29	53	205	129	56	—	83	70
Surrey ..	30	31	199	141	111	56	106	19	35	189	96	21	11	63	83
Sussex, East ..	16	49	149	145	100	71	99	16	46	92	134	32	8	59	76
Sussex, West ..	33	35	93	96	76	36	68	31	28	104	94	23	13	49	57
Warwickshire ..	33	53	215	115	101	33	99	69	63	215	93	17	7	73	86
Westmorland ..	30	93	40	135	130	—	86	—	23	220	54	21	—	47	65
Wight, Isle of ..	87	17	98	102	104	32	79	—	—	118	84	45	11	51	64
Wiltshire ..	36	35	52	119	138	79	88	47	30	170	132	29	12	75	82
Worcestershire ..	20	36	190	118	136	66	105	23	56	162	73	34	24	65	84
Yorkshire, East Riding ..	—	16	40	90	66	28	52	—	14	181	70	27	—	49	51
Yorkshire, North Riding..	45	15	58	83	124	71	72	11	41	193	77	22	15	59	66
Yorkshire, West Riding ..	40	37	118	117	116	75	94	35	39	185	89	20	16	64	78
Anglesey ..	83	182	150	180	143	115	152	—	186	387	159	38	—	117	132
Brecknockshire ..	—	53	43	128	82	—	71	158	158	250	151	38	34	124	97
Caernarvonshire ..	35	141	270	274	190	160	194	86	136	537	124	31	19	131	160
Cardiganshire ..	—	—	71	11	36	—	20	—	—	167	39	—	—	25	23
Carmarthenshire ..	52	41	164	137	150	—	109	—	19	265	108	46	42	82	96



Table LXXXIX.—continued.

Area	Males							Females							Persons
	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-	65 and over	All ages	
Administrative Counties—contd.															
Denbighshire ..	76	40	93	150	127	100	109	15	17	193	137	39	26	77	93
Flintshire ..	—	18	55	107	145	34	79	33	29	141	124	17	24	67	73
Glamorganshire ..	52	51	256	148	124	76	125	48	63	296	137	29	11	101	113
Merionethshire ..	—	—	70	212	111	74	99	111	147	667	104	71	—	158	128
Monmouthshire ..	45	20	305	124	142	86	122	30	69	404	108	36	22	104	113
Montgomeryshire ..	—	—	179	53	49	—	51	87	31	125	113	53	—	69	61
Pembrokeshire ..	24	18	153	78	136	24	86	—	75	159	81	34	19	65	75
Radnorshire ..	—	77	53	36	34	—	36	111	—	143	185	—	91	89	60
County Boroughs:															
Barnsley ..	102	56	180	183	221	172	161	94	65	500	179	—	—	141	151
Barrow-in-Furness ..	29	65	167	155	174	33	125	65	—	167	130	65	—	80	102
Bath ..	—	23	242	196	150	167	142	—	36	212	113	42	—	70	101
Birkenhead ..	41	79	126	230	197	70	152	71	77	267	137	32	—	101	126
Birmingham ..	85	60	174	139	176	65	129	51	57	237	99	39	20	86	106
Blackburn ..	24	—	73	79	75	174	77	—	46	194	115	16	47	69	73
Blackpool ..	26	12	104	164	105	88	102	—	—	207	59	36	—	47	71
Bolton ..	—	18	184	80	133	96	91	32	51	127	85	21	26	58	74
Bootle ..	108	97	396	211	273	235	220	73	69	355	282	54	48	176	197
Bournemouth ..	18	—	233	193	92	114	116	103	22	124	105	25	61	66	88
Bradford ..	23	48	150	130	129	101	107	23	40	134	79	30	21	55	79
Brighton ..	18	100	380	191	192	33	164	—	231	333	167	22	44	120	139
Bristol ..	63	60	262	156	168	60	141	53	58	293	100	42	27	90	114
Burnley ..	26	18	159	94	149	53	94	26	42	59	86	14	55	47	69
Burton upon Trent ..	—	—	120	42	158	43	68	—	—	51	47	28	—	27	47
Bury ..	—	—	107	89	100	31	68	77	42	105	154	24	67	84	77
Canterbury ..	—	—	34	241	28	91	74	—	59	214	125	24	—	70	72
Carlisle ..	61	68	93	162	197	56	127	69	73	610	150	56	—	144	135
Chester ..	200	54	83	213	113	95	132	59	—	196	145	14	—	76	102
Coventry ..	76	47	267	182	176	69	154	17	32	180	135	45	37	85	119
Croydon ..	42	28	153	85	137	116	97	19	29	165	68	24	17	52	73

Table LXXXIX.—continued.

Area	Males						Females						Persons		
	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-		65 and over	All ages
County Boroughs—contd.															
Darlington ..	21	16	280	130	158	91	121	—	20	200	102	37	38	76	98
Derby ..	40	21	294	128	83	61	103	47	38	139	118	33	—	72	87
Dewsbury ..	56	28	—	135	63	32	67	—	—	38	76	13	—	29	47
Doncaster ..	—	—	136	85	87	135	80	—	—	109	144	9	26	62	71
Dudley ..	53	143	191	126	194	50	144	33	43	250	99	11	83	84	112
Eastbourne ..	—	27	48	79	69	108	61	—	—	417	53	38	—	57	59
East Ham ..	91	97	254	94	150	17	117	106	33	171	83	55	46	78	97
Exeter ..	45	128	412	107	151	192	155	—	45	333	150	25	34	98	123
Gateshead ..	133	338	424	165	258	35	222	113	259	472	198	45	20	191	206
Gloucester ..	50	67	125	196	169	71	141	29	122	378	141	24	—	112	126
Great Yarmouth ..	48	42	172	68	100	188	89	—	63	111	96	42	—	58	72
Grimsby ..	125	101	186	145	168	161	148	158	160	209	158	28	18	120	133
Halifax ..	100	19	98	271	354	146	211	67	81	274	228	71	—	127	165
Hastings ..	—	26	280	100	231	146	134	—	81	50	122	29	34	57	89
Huddersfield ..	—	11	122	86	83	54	68	—	13	159	56	21	22	45	57
Ipswich ..	83	114	222	129	261	132	165	73	99	233	96	33	—	84	122
Kingston upon Hull ..	17	28	167	143	148	107	111	12	23	206	102	28	14	72	91
Leeds ..	30	34	150	101	160	85	105	44	29	215	89	28	3	66	84
Leicester ..	61	59	200	155	156	66	128	102	76	343	128	48	21	114	121
Lincoln ..	45	40	96	113	105	125	95	40	75	196	89	—	23	69	82
Liverpool ..	125	74	324	248	306	137	218	115	88	437	231	74	25	173	194
Manchester ..	69	59	199	135	149	66	123	83	42	246	97	34	5	82	101
Middlesbrough ..	233	134	213	175	199	111	181	254	165	409	137	75	26	163	172
Newcastle upon Tyne ..	74	65	337	216	174	90	174	59	115	464	132	28	6	130	151
Northampton ..	28	28	241	101	103	42	95	29	45	329	90	13	13	81	87
Norwich ..	23	13	195	127	165	88	117	58	15	122	80	29	40	57	85
Nottingham ..	133	120	284	207	154	130	177	170	119	449	191	63	17	171	174
Oldham ..	64	36	129	139	93	73	99	106	27	246	86	—	—	61	79
Oxford ..	114	16	233	129	88	59	113	30	48	152	83	23	—	64	86
Plymouth ..	—	49	219	154	170	102	133	21	22	480	123	35	—	107	120
Portsmouth ..	103	41	155	134	167	118	128	50	66	326	89	47	25	92	110



Table LXXXIX.—continued.

Area	Males						Females						Persons	
						All ages						All ages		
	0-	5-	15-	25-	45-		65 and over	0-	5-	15-	25-			45-
County Boroughs—contd.														
Preston ..	38	73	123	137	169	—	112	48	25	96	64	42	16	81
Reading ..	21	16	258	116	159	70	121	—	25	172	150	51	14	101
Rochdale ..	56	82	205	141	53	42	99	30	—	150	95	15	36	78
Rotherham ..	33	20	105	90	74	73	73	—	16	211	68	—	—	61
St. Helens ..	35	25	106	99	111	122	87	—	36	132	132	34	—	79
Salford ..	106	14	150	153	187	83	127	50	30	306	106	42	20	109
Sheffield ..	223	185	143	122	170	75	149	203	134	217	123	37	15	127
Smethwick ..	132	382	289	136	345	77	237	345	375	308	102	102	—	202
Southampton ..	86	48	170	112	219	105	129	67	138	180	91	24	38	108
Southeast-on-Sea ..	61	30	173	119	120	120	107	56	31	269	60	44	7	82
Southport ..	—	—	71	126	113	43	82	43	20	34	89	14	—	55
South Shields ..	127	135	198	247	310	75	207	139	230	434	205	55	19	193
Stockport ..	16	32	101	75	104	48	72	66	11	115	72	14	—	56
Stoke on Trent ..	19	93	114	137	157	45	111	74	59	243	98	64	30	103
Sunderland ..	62	27	308	196	144	90	154	114	110	479	150	47	19	153
Tynemouth ..	—	99	209	213	178	74	152	57	73	295	212	27	—	137
Wakefield ..	47	—	116	58	83	71	65	125	—	194	60	14	—	58
Wallasey ..	34	44	167	111	156	53	104	22	90	130	127	46	28	92
Walsall ..	88	88	264	189	244	135	179	89	48	370	140	34	21	147
Warrington ..	—	—	145	118	192	125	103	37	16	230	60	31	50	88
West Bromwich ..	212	96	176	158	186	118	156	206	98	373	116	32	23	142
West Ham ..	92	73	226	125	197	108	142	58	45	210	93	42	53	112
West Hartlepool ..	42	56	250	112	120	—	100	29	66	377	63	24	—	95
Wigan ..	—	27	167	126	99	51	90	27	42	236	102	48	19	86
Wolverhampton ..	—	8	183	164	185	33	115	—	26	204	91	20	—	88
Worcester ..	50	44	250	177	130	71	134	42	—	102	111	24	23	94
York ..	23	38	169	123	80	49	91	59	43	152	51	29	—	74
Cardiff ..	63	82	301	181	165	77	154	38	50	280	196	34	13	133
Merthyr Tydfil ..	95	—	300	224	194	167	178	33	81	302	255	83	—	162
Newport ..	63	94	414	89	163	45	137	21	39	375	91	62	16	116
Swansea ..	32	75	140	160	173	167	139	59	—	213	151	43	55	115

Table XC.—Respiratory tuberculosis : Death rates per million living by sex and age and notifications per 100 deaths in Regions, population Density Aggregates within Regional Groups, County Boroughs and Administrative Counties, 1951

Area	Males						Females						Persons			
	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-	65 and over	All ages	All ages	Notifica- tions per hundred deaths
<b>ENGLAND AND WALES</b>																
Conurbations .. .. .	30	7	111	328	773	807	375	25	11	196	291	187	178	181	275	355
Urban areas with populations of 100,000 and over .. .. .	27	6	139	363	898	1,100	447	31	15	202	308	194	202	196	314	?
Urban areas with populations of 50,000 and under 100,000 .. .. .	31	7	117	398	898	927	439	16	10	260	347	226	211	218	323	?
Urban areas with populations under 50,000 .. .. .	42	4	106	317	840	743	384	22	9	211	254	180	171	169	271	?
Rural areas .. .. .	40	9	104	293	709	651	339	16	8	192	290	177	155	173	252	?
	19	6	79	248	476	460	237	29	5	132	229	159	136	140	189	?
<b>NORTH OF ENGLAND</b>																
Northern .. .. .	76	13	157	396	908	579	406	7	13	369	371	228	166	231	317	385
East and West Ridings .. .. .	38	10	111	314	709	928	372	23	18	193	267	156	158	164	264	327
North Western .. .. .	18	4	128	392	912	905	442	30	18	257	386	195	186	221	325	296
Sub-total:																
Northern .. .. .	38	8	131	369	849	835	412	22	17	266	347	190	173	206	305	325
East and West Ridings .. .. .																
North Western .. .. .																
Tyneside conurbation .. .. .	26	—	255	521	1,128	639	513	27	23	393	456	189	87	248	375	?
West Yorkshire conurbation .. .. .	42	9	107	315	658	1,080	386	29	37	170	239	131	197	156	263	?
South East Lancashire conurbation .. .. .	29	6	88	376	925	941	446	10	6	219	359	175	248	209	320	?
Merseyside conurbation .. .. .	—	—	232	570	1,336	1,380	600	77	28	356	608	246	278	321	451	?
Total conurbations .. .. .	25	5	152	420	957	1,023	473	33	23	265	394	178	221	225	341	?
Urban areas with populations of 100,000 and over .. .. .	38	8	57	420	870	974	438	14	17	282	370	229	183	225	327	
Urban areas with populations of 50,000 and under 100,000 .. .. .	77	—	149	380	992	600	428	22	27	320	288	224	104	199	309	?
Urban areas with populations under 50,000 .. .. .	58	10	146	312	735	694	357	16	10	256	315	186	155	190	270	?
Rural areas .. .. .	27	23	91	233	601	446	258	—	—	202	225	175	59	140	200	?
<b>MIDLANDS AND EASTERN</b>																
North Midland .. .. .	20	4	130	282	660	619	316	27	13	257	262	150	172	169	242	345
Midland .. .. .	45	9	139	406	952	791	429	37	6	220	306	242	169	199	312	311
Eastern .. .. .	22	9	60	184	491	561	235	16	5	111	224	130	171	134	183	426
Sub-total:																
North Midland .. .. .	31	8	112	307	727	663	339	28	8	201	270	180	170	171	253	345
Midland .. .. .																
Eastern .. .. .																
West Midland conurbation .. .. .	39	18	188	507	1,171	951	529	52	6	307	344	277	178	233	376	?
Urban areas with populations of 100,000 and over .. .. .	32	—	136	342	917	1,024	428	12	8	233	279	176	213	183	301	?
Urban areas with populations of 50,000 and under 100,000 .. .. .	20	—	77	302	812	767	354	—	—	143	236	145	254	154	252	?



Area	Males							Females							Persons	
	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-	65 and over	All ages	All ages	Notifica- tions per hundred deaths
<b>MIDLANDS AND EASTERN—contd.</b>																
Urban areas with populations under 50,000 ..	43	16	83	240	642	638	300	9	11	158	258	164	163	157	226	?
Rural areas .. .. .	16	—	97	184	346	358	182	47	9	145	227	142	120	136	159	?
<b>GREATER LONDON</b> .. .. .	26	4	115	286	785	1,195	405	24	12	126	239	187	194	164	277	} 415
<b>SOUTH OF ENGLAND</b>																
Remainder of South Eastern .. .. .	29	5	71	308	597	604	308	—	—	119	182	175	179	137	217	
Southern .. .. .	17	—	59	231	610	631	274	28	—	98	204	161	141	131	201	417
South Western .. .. .	—	14	105	354	674	562	334	17	10	198	289	198	170	182	255	338
Sub-total:																
Remainder of South Eastern .. .. .	14	7	79	299	630	597	306	15	4	141	228	179	164	151	226	*401
Southern .. .. .																
South Western .. .. .																
Urban areas with populations of 100,000 and over .. .. .	16	10	120	413	813	652	404	—	10	278	372	247	217	233	314	?
Urban areas with populations of 50,000 and under 100,000 .. .. .	22	14	115	260	793	839	375	48	—	127	238	153	165	150	252	?
Urban areas with populations under 50,000 ..	26	5	82	268	671	582	315	19	—	144	219	187	147	149	227	?
Rural areas .. .. .	—	5	62	288	435	510	241	9	5	72	154	146	160	111	176	?
<b>WALES</b> .. .. .	45	5	115	446	951	888	467	56	5	198	476	226	231	250	356	309
Urban areas with populations of 100,000 and over .. .. .	33	24	222	527	1,127	926	549	80	—	186	474	305	286	278	407	?
Urban areas with populations of 50,000 and under 100,000 .. .. .	—	—	—	333	857	1,500	414	—	—	750	111	750	—	313	361	?
Urban areas with populations under 50,000 ..	20	—	123	417	903	1,019	459	22	13	236	467	143	188	227	340	?
Rural areas .. .. .	91	—	52	411	867	707	417	91	—	125	495	216	283	251	334	?
<b>County Boroughs</b>																
Barnsley .. .. .	—	—	—	367	519	345	237	—	—	600	427	118	—	239	238	633
Barrow-in-Furness .. .. .	—	—	—	583	814	1,000	476	—	—	—	500	260	286	236	356	288
Bath .. .. .	—	—	—	—	750	952	296	—	—	192	81	85	132	88	177	571
Birkenhead .. .. .	—	—	211	622	1,293	2,105	673	—	85	95	441	316	230	243	449	280
Birmingham .. .. .	—	—	161	398	1,147	959	481	—	13	181	261	304	217	202	337	316
Blackburn .. .. .	42	12	182	216	1,088	870	536	57	—	—	382	155	353	197	351	208
Blackpool .. .. .	24	—	149	175	950	875	470	—	—	122	274	324	—	180	306	231
Bolton .. .. .	—	—	—	310	734	685	356	—	—	339	325	83	256	192	269	273
Bootle .. .. .	—	—	—	625	1,364	2,941	606	—	—	161	855	405	476	388	493	400
Bournemouth .. .. .	—	—	167	468	652	506	392	—	—	112	191	123	272	148	256	343
Bradford .. .. .	—	—	143	325	767	1,008	405	—	—	323	278	162	211	201	294	267
Brighton .. .. .	77	—	141	160	505	333	245	77	56	98	180	112	292	138	185	752

\* Including Greater London.

Table XC.—continued.

Area	Males						Females						Persons			
	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-	65 and over	All ages	Notifica- tions per hundred deaths	
County Boroughs—contd.																
Bristol ..	..	31	111	393	832	603	394	—	31	393	431	338	234	289	339	336
Burnley ..	..	—	227	472	990	526	470	263	208	—	517	145	182	247	353	197
Burton upon Trent ..	..	—	400	278	877	870	424	—	—	—	313	141	—	117	264	177
Bury ..	..	—	—	—	429	—	108	—	—	—	110	118	667	162	136	563
Canterbury ..	..	—	—	690	556	909	370	—	—	714	—	238	—	140	252	286
Carlisle ..	..	—	465	476	1,127	278	512	—	—	244	100	449	—	173	339	400
Chester ..	..	—	—	328	968	952	500	—	—	217	645	135	—	229	353	288
Coventry ..	..	—	—	421	931	1,149	443	—	—	240	288	—	—	144	290	409
Croydon ..	..	69	81	201	634	698	309	—	—	72	175	148	275	116	208	352
Darlington ..	..	—	200	407	947	606	413	—	—	308	236	370	385	252	330	296
Derby ..	..	—	588	345	829	1,212	517	—	127	246	245	163	241	190	347	251
Dewsbury ..	..	—	—	405	781	645	392	—	—	1,154	380	133	—	250	318	147
Doncaster ..	..	—	169	342	1,058	270	424	—	—	—	339	187	—	144	281	252
Dudley ..	..	286	213	583	1,045	—	515	—	—	962	220	333	—	299	400	280
Eastbourne ..	..	—	—	263	690	1,351	420	—	—	833	426	506	282	380	398	148
East Ham ..	..	—	—	50	709	508	228	—	—	244	340	274	462	251	240	403
Exeter ..	..	—	455	165	698	385	268	—	—	208	250	119	169	185	664	504
Gateshead ..	..	—	625	686	1,250	526	511	189	—	674	407	303	—	309	409	504
Gloucester ..	..	—	—	411	964	1,429	675	—	—	222	326	—	—	115	386	327
Great Yarmouth ..	..	—	—	840	1,000	625	380	—	—	741	274	282	526	219	294	247
Grimsby ..	..	—	169	526	1,416	1,935	738	—	—	149	526	93	—	248	487	274
Halifax ..	..	—	—	286	619	1,463	455	—	—	—	276	65	—	129	274	600
Hastings ..	..	—	—	—	1,077	1,220	520	—	—	—	222	—	112	78	260	341
Huddersfield ..	..	—	—	160	119	357	111	—	—	—	223	157	326	151	132	429
Ipswich ..	..	—	317	143	435	377	221	—	—	—	112	83	—	55	134	914
Kingston upon Hull ..	..	46	111	397	932	984	434	—	—	132	287	312	282	199	311	291
Leeds ..	..	58	73	383	977	1,408	514	49	58	123	322	124	324	192	341	247
Leicester ..	..	—	267	416	1,238	1,661	500	—	—	193	411	178	206	215	351	344
Lincoln ..	..	—	—	283	814	1,875	460	—	—	196	297	118	227	317	317	259
Liverpool ..	..	—	267	642	1,602	1,587	668	120	32	478	718	243	295	375	512	379
Manchester ..	..	58	174	435	1,414	1,440	606	—	—	375	568	276	263	316	452	224
Middlesbrough ..	..	97	106	404	1,325	635	465	—	—	538	457	548	256	347	407	422
Newcastle upon Tyne ..	..	—	181	379	1,105	1,081	501	—	96	569	448	150	64	266	377	400
Northampton ..	..	—	185	360	873	1,667	527	—	—	411	60	133	—	105	297	294
Norwich ..	..	227	—	289	394	1,324	355	—	—	244	227	176	198	170	256	332
Nottingham ..	..	—	55	326	721	1,217	356	—	—	283	283	217	—	206	278	627
Oldham ..	..	213	—	374	1,000	727	452	—	135	154	107	—	233	94	264	300
Oxford ..	..	—	—	152	877	1,765	398	—	—	—	64	308	167	112	243	354
Plymouth ..	..	—	199	801	766	795	516	—	—	480	569	346	294	348	431	279
Portsmouth ..	..	128	100	292	739	686	339	—	—	496	179	215	124	177	257	427
Preston ..	..	—	609	704	351	351	403	—	—	685	291	240	476	285	344	279
Reading ..	..	—	152	331	797	1,163	427	—	—	115	375	256	—	182	298	338
Rochdale ..	..	—	—	519	531	208	329	—	—	333	79	296	357	199	262	296
Rotherham ..	..	333	—	410	1,053	1,220	530	—	119	549	—	91	—	70	292	208
St. Helens ..	..	—	118	263	794	1,463	387	—	—	—	329	68	—	214	299	264



Table XC.—continued.

Area	Males							Females							Persons		
	0-	5-	15-	25-	45-	65 and over	All ages	0-	5-	15-	25-	45-	65 and over	All ages	All ages	Notifica- tions per hundred deaths	
<b>County Boroughs—contd.</b>																	
Salford ..	—	—	93	634	1,604	1,167	646	—	—	165	495	376	303	291	461	237	
Sheffield ..	—	—	—	366	751	1,125	407	50	28	197	424	142	91	200	298	426	
Smethwick ..	—	182	—	545	2,143	1,154	782	—	—	—	424	408	—	222	484	416	
Southampton ..	—	—	—	361	1,421	814	505	—	—	—	528	236	189	226	359	300	
Southeast-on-Sea ..	—	—	—	299	570	1,200	355	185	—	128	383	88	132	178	257	318	
Southport ..	—	—	—	388	1,134	870	540	—	—	169	81	—	110	61	262	209	
South Shields ..	—	—	247	479	1,504	—	498	—	—	241	464	68	185	202	347	557	
Stockport ..	—	—	—	249	694	806	328	—	—	256	574	187	—	241	282	200	
Stoke on Trent ..	127	—	120	428	1,538	1,081	573	—	—	347	350	486	448	313	443	231	
Sunderland ..	—	—	—	957	1,186	1,493	635	—	—	486	500	233	377	306	463	331	
Tynemouth ..	400	—	—	449	1,096	370	427	—	—	—	505	274	222	237	831	414	
Wakefield ..	—	—	—	233	833	714	323	—	—	—	476	282	—	204	265	219	
Wallasey ..	—	—	185	296	1,101	1,316	475	—	—	—	482	76	278	200	326	282	
Walsall ..	—	—	—	857	1,417	2,432	737	—	—	411	618	135	833	348	541	271	
Warrington ..	—	—	182	273	769	938	333	—	—	270	431	208	—	216	273	323	
West Bromwich ..	—	—	147	935	1,047	294	564	—	—	339	479	430	227	320	443	321	
West Ham ..	303	—	—	209	656	1,351	346	—	89	—	271	421	426	241	292	384	
West Hartlepool ..	—	—	—	208	800	417	372	—	—	566	268	595	—	292	331	288	
Wigan ..	—	—	625	259	1,188	769	546	—	208	1,091	315	96	—	283	414	209	
Wolverhampton ..	—	—	215	738	1,272	1,833	661	—	—	291	632	254	106	303	479	183	
Worcester ..	—	—	278	380	870	357	397	—	—	—	333	357	—	188	285	329	
York ..	—	—	—	323	160	488	177	—	—	202	256	288	—	183	180	411	
Cardiff ..	—	—	301	593	1,199	481	536	—	—	179	608	344	267	386	431	309	
Merthyr Tydfil ..	—	—	353	353	833	1,250	418	—	—	698	106	714	—	309	360	450	
Newport (Mon.) ..	156	—	172	318	1,220	1,136	529	—	—	156	244	462	323	239	380	305	
Swansea ..	—	93	280	630	941	606	537	—	—	93	431	130	330	206	367	314	
<b>Administrative Counties</b>																	
Bedfordshire ..	—	—	—	98	778	458	242	—	—	99	197	79	253	123	183	546	
Berkshire ..	—	—	122	192	350	667	216	91	—	101	242	332	160	193	204	451	
Buckinghamshire ..	—	—	35	172	309	690	190	—	—	72	105	85	329	102	145	552	
Cambridgeshire ..	—	—	187	206	543	326	247	—	—	—	85	192	74	81	162	489	
Cheshire ..	—	—	64	226	563	560	264	31	—	86	174	113	88	104	181	290	
Cornwall ..	—	43	41	352	576	498	302	160	—	143	267	234	205	195	246	291	
Cumberland ..	—	—	323	427	780	1,183	460	—	—	563	518	156	82	276	368	334	
Derbyshire ..	288	—	102	150	499	519	226	—	—	185	182	136	132	123	174	362	
Devon ..	36	—	93	378	548	543	326	—	—	37	273	239	275	192	255	239	
Dorset ..	85	—	85	194	526	516	249	—	—	169	169	53	122	80	161	478	
Durham ..	48	28	199	351	961	399	391	—	16	390	383	278	270	261	326	358	
Ely, Isle of ..	—	—	—	—	102	667	91	—	—	—	227	99	—	89	90	725	
Essex ..	28	9	44	200	661	801	296	14	—	125	192	149	179	132	210	403	
Gloucestershire ..	—	—	186	316	678	488	314	—	—	255	228	207	31	146	228	366	
Herefordshire ..	—	—	122	179	683	625	307	217	—	—	359	182	—	153	228	479	
Hertfordshire ..	—	—	142	141	324	677	200	78	—	97	265	161	79	147	172	477	
Huntingdonshire ..	—	—	—	442	568	769	352	—	—	—	227	127	217	123	245	224	
Kent ..	30	10	131	388	742	792	392	—	—	160	255	139	188	152	264	343	

Table XC.—continued.

Area	Males							Females							Persons	
	0—	5—	15—	25—	45—	65 and over	All ages	0—	5—	15—	25—	45—	65 and over	All ages	All ages	Notifica- tions per hundred deaths
<b>Administrative Counties—contd.</b>																
Lancashire ..	—	14	90	340	666	677	346	12	7	171	293	194	162	179	258	319
Leicestershire ..	75	—	88	307	660	488	321	71	—	121	350	180	105	180	249	285
Lincolnshire (Parts of Holland) ..	—	—	508	467	345	233	301	—	—	130	288	172	313	174	236	254
Lincolnshire (Parts of Kesteven)	—	—	82	328	373	313	212	—	109	137	144	219	115	137	175	417
Lincolnshire (Parts of Lindsey) ..	—	42	—	144	373	366	160	—	—	91	227	209	106	137	149	374
London ..	21	—	103	332	1 094	1,663	531	22	16	147	243	226	224	183	345	424
Middlesex ..	59	—	146	235	601	717	311	33	36	126	260	166	182	163	232	458
Norfolk ..	65	35	31	110	483	450	195	—	—	165	198	46	85	102	149	404
Northamptonshire ..	90	—	229	296	580	204	284	82	—	253	361	86	59	167	223	240
Northumberland ..	52	31	74	324	729	545	337	—	—	107	276	166	75	143	239	434
Nottinghamshire ..	—	—	109	194	617	553	256	88	25	560	233	143	209	208	232	302
Oxfordshire ..	—	—	60	141	408	704	203	—	—	233	118	48	—	79	141	480
Peterborough, Soke of : ..	—	—	—	521	909	263	413	—	—	1,667	—	500	200	31	219	414
Rutland ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Shropshire ..	—	—	175	277	453	522	248	76	—	—	250	94	118	217	98	600
Somerset ..	—	—	70	311	691	476	326	—	—	137	194	51	158	114	183	196
Southampton ..	—	—	34	208	696	502	251	74	—	24	203	157	65	109	212	376
Staffordshire ..	52	—	129	411	959	516	397	51	—	335	355	239	145	112	181	429
Suffolk, East ..	—	—	—	356	359	441	239	—	—	74	310	281	168	222	309	295
Suffolk, West ..	—	—	192	279	221	147	178	—	—	128	204	185	562	187	212	374
Surrey ..	—	11	81	308	477	704	292	—	—	67	172	129	122	204	191	370
Sussex, East ..	—	—	—	284	315	306	196	—	—	—	154	169	161	108	192	430
Sussex, West ..	83	—	116	363	449	619	308	—	—	—	96	210	219	116	151	506
Warwickshire ..	93	—	173	195	600	670	282	—	—	—	199	233	108	122	207	277
Westmorland ..	303	—	—	135	390	263	190	—	—	104	199	233	108	140	210	408
Wight, Isle of ..	—	—	—	169	755	476	293	—	—	—	217	—	—	56	119	550
Wiltshire ..	—	39	65	205	567	393	228	—	—	—	195	149	114	117	199	321
Worcestershire ..	—	—	40	372	544	803	303	—	35	179	211	143	—	119	176	465
Yorkshire, East Riding ..	—	—	57	104	655	660	256	—	—	211	175	168	95	136	217	387
Yorkshire, North Riding ..	—	—	24	263	534	496	226	—	—	157	232	34	189	118	184	274
Yorkshire, West Riding ..	42	17	183	293	649	789	345	14	9	263	212	132	149	142	185	357
Anglesey ..	—	—	—	200	794	1,154	402	—	—	183	197	154	95	132	235	333
Brecknockshire ..	—	—	—	256	685	—	247	—	—	—	476	253	—	177	277	479
Caernarvonshire ..	351	—	270	963	1,076	1,733	815	—	—	455	685	380	345	390	319	306
Cardiganshire ..	—	—	—	110	1,636	—	392	—	—	366	414	155	192	226	500	321
Cardiganshire ..	—	—	182	431	892	625	444	—	—	417	526	247	244	288	338	67
Denbighshire ..	—	—	—	40	490	500	178	147	—	204	346	249	421	244	344	278
Flintshire ..	—	—	91	732	1,570	678	649	164	—	459	442	130	172	243	211	442
Glamorganshire ..	—	—	94	434	953	1,000	467	30	19	109	239	225	118	165	407	180
Merionethshire ..	—	—	—	385	1,333	2,963	755	—	—	222	634	165	326	296	380	297
Monmouthshire ..	—	—	105	352	635	1,049	372	—	—	—	417	—	—	99	434	294
Montgomeryshire ..	—	—	—	877	984	435	558	—	—	—	389	103	112	154	266	426
Pembrokeshire ..	476	—	—	391	583	476	338	222	—	159	296	175	513	163	348	262
Radnorshire ..	—	—	—	—	690	1,818	364	—	—	—	370	—	—	237	286	240



Table XCI.—Death rates per million living at ages 0-14 by sex from tuberculous meningitis and other non-respiratory tuberculosis in Standard Regions, County Boroughs and Administrative Counties, 1951

Area	Males		Area	Males		Females	
	Tuberculous meningitis	Other non-respiratory tuberculosis		Tuberculous meningitis	Other non-respiratory tuberculosis	Tuberculous meningitis	Other non-respiratory tuberculosis
<b>England and Wales</b>	60	10	<b>County Boroughs—contd.</b>	9		216	—
Northern ..	82	13	East Ham ..	11	..	—	—
East and West Ridings ..	67	15	Exeter ..	15	..	—	72
North Western ..	87	7	Gateshead ..	13	..	—	308
North Midland ..	50	12	Gloucester ..	5	..	—	—
Midland ..	59	9	Great Yarmouth ..	12	..	157	84
Eastern ..	65	11	Grimsby ..	6	..	109	93
London and South Eastern ..	36	8	Halifax ..	5	..	—	—
Southern ..	52	7	Hastings ..	4	..	139	—
South Western ..	45	6	Huddersfield ..	3	..	157	82
Wales ..	86	17	Ipswich ..	14	..	26	52
			Kingston upon Hull		..	57	73
			Leeds ..		..	57	35
			Leicester ..		..	—	—
			Lincoln ..		..	114	106
			Liverpool ..		..	85	103
			Manchester ..		..	225	54
			Middlesbrough ..		..	90	31
			Newcastle upon Tyne		..	—	297
			Northampton ..		..	252	187
			Norwich ..		..	50	—
			Nottingham ..		..	—	—
			Oldham ..		..	—	—
			Oxford ..		..	41	104
			Plymouth ..		..	80	85
			Portsmouth ..		..	—	37
			Preston ..		..	—	83
			Reading ..		..	—	—
			Rochdale ..		..	118	—
			Rotherham ..		..	123	—
			St. Helens ..		..	72	—
			Salford ..		..	87	224
			Sheffield ..		..	55	94
			Smethwick ..		..	108	18
			Southampton ..		..	243	—
			Southend-on-Sea ..		..	—	66
			Southport ..		..	313	—
			South Shields ..		..	129	182
			Stockport ..		..	54	129
			Stoke on Trent ..		..	175	130
			Sunderland ..		..	—	179
					..	—	45
<b>County Boroughs</b>							
Barnsley ..	123	123	East Ham ..	9	..	—	—
Barrow-in-Furness ..	123	—	Exeter ..	11	..	—	—
Bath ..	114	—	Gateshead ..	15	..	—	—
Birkenhead ..	76	8	Gloucester ..	13	..	—	—
Birmingham ..	106	—	Great Yarmouth ..	5	..	—	—
Blackburn ..	83	—	Grimsby ..	12	..	157	84
Blackpool ..	55	—	Halifax ..	6	..	109	93
Bolton ..	101	—	Hastings ..	5	..	—	—
Bootle ..	—	—	Huddersfield ..	4	..	139	—
Bournemouth ..	95	63	Ipswich ..	3	..	157	82
Bradford ..	68	—	Kingston upon Hull	14	..	26	52
Brighton ..	79	—	Leeds ..	—	..	57	73
Bristol ..	—	—	Leicester ..	—	..	57	35
Burnley ..	—	—	Lincoln ..	106	..	—	—
Burton upon Trent ..	169	—	Liverpool ..	118	..	114	106
Bury ..	—	—	Manchester ..	—	..	85	103
Canterbury ..	130	—	Middlesbrough ..	—	..	225	54
Carlisle ..	385	—	Newcastle upon Tyne	8	..	90	31
Chester ..	104	—	Northampton ..	—	..	252	187
Coventry ..	76	—	Norwich ..	—	..	50	—
Croydon ..	180	90	Nottingham ..	—	..	—	—
Darlington ..	68	—	Oldham ..	—	..	—	—
Derby ..	—	—	Oxford ..	33	..	41	104
Dewsbury ..	—	—	Plymouth ..	71	..	80	85
Doncaster ..	—	—	Portsmouth ..	20	..	—	37
Dudley ..	370	—	Preston ..	233	..	—	83
Eastbourne ..	—	—	Reading ..	200	..	—	—

Table XCI.—continued.

Area	Males		Females		Area	Males		Females	
	Tuberculous meningitis	Other non-respiratory tuberculosis	Tuberculous meningitis	Other non-respiratory tuberculosis		Tuberculous meningitis	Other non-respiratory tuberculosis	Tuberculous meningitis	Other non-respiratory tuberculosis
<b>County Boroughs—contd.</b>									
Tynemouth ..	—	—	395	—	London ..	38	9	50	6
Wakefield ..	79	—	—	—	Middlesex ..	21	4	38	—
Wallasey ..	126	—	—	—	Norfolk ..	91	23	—	—
Walsall ..	87	87	156	110	Northamptonshire ..	34	—	36	—
Warrington ..	—	—	220	—	Northumberland..	—	—	40	—
West Bromwich ..	53	53	211	—	Nottinghamshire..	61	15	63	16
West Ham ..	—	—	110	—	Oxfordshire ..	59	—	52	—
West Hartlepool ..	—	—	208	—	Peterborough, Soke of ..	—	—	—	—
Wigan ..	—	—	—	—	Rutland ..	—	—	—	—
Wolverhampton ..	43	—	—	56	Shropshire ..	28	—	—	30
Worcester ..	—	—	—	—	Somerset ..	39	—	40	—
York ..	34	—	114	—	Southampton ..	53	—	29	—
Cardiff ..	—	—	—	—	Staffordshire ..	48	—	121	—
Merthyr Tydfil ..	—	—	81	—	Suffolk, East ..	—	42	42	—
Newport (Mon.) ..	—	—	375	61	Suffolk, West ..	76	—	90	—
Swansea ..	178	—	—	—	Surrey ..	41	7	21	7
<b>Administrative Counties</b>									
Bedfordshire ..	109	—	65	—	Sussex, East ..	57	—	31	—
Berkshire ..	31	31	68	—	Sussex, West ..	57	—	32	32
Buckinghamshire ..	23	—	49	—	Warwickshire ..	33	49	53	—
Cambridgeshire ..	54	—	—	24	Westmorland ..	—	—	—	—
Cheshire ..	76	—	70	—	Wight, Isle of ..	94	—	—	—
Cornwall ..	53	—	59	23	Wiltshire ..	26	—	23	—
Cumberland ..	34	34	167	29	Worcestershire ..	40	—	65	22
Derbyshire ..	37	—	12	12	Yorkshire, East Riding ..	—	—	—	—
Devon ..	—	33	21	—	Yorkshire, North Riding ..	89	22	69	—
Dorset ..	—	—	34	—	Yorkshire, West Riding..	92	27	33	16
Durham ..	107	9	103	9	Anglesey ..	—	—	—	—
Ely, Isle of ..	—	101	—	—	Brecknockshire ..	161	—	175	175
Essex ..	54	5	39	—	Caernarvonshire ..	—	—	86	—
Gloucestershire ..	72	—	81	—	Cardiganshire ..	217	—	357	179
Herefordshire ..	69	—	145	—	Carmarthenshire..	387	—	179	—
Hertfordshire ..	15	—	15	—	Denbighshire ..	49	—	—	—
Huntingdonshire ..	—	—	—	—	Flintshire..	112	—	61	—
Kent ..	41	12	41	12	Glamorganshire ..	46	46	117	12
Lancashire ..	80	9	82	14	Merionethshire ..	—	—	—	—
Leicestershire ..	—	28	53	—	Monmouthshire ..	49	—	89	—
Lincolnshire (Parts of Holland) ..	—	—	—	—	Montgomeryshire ..	—	—	—	—
Lincolnshire (Parts of Kesteven) ..	190	63	134	—	Pembrokeshire ..	303	101	102	—
Lincolnshire (Parts of Lindsey) ..	52	—	29	—	Radnorshire ..	435	—	—	—



## CANCER

### Cancer trends since 1900

During the period 1900 to 1951 there have been several revisions of the International Classification of Diseases and Causes of Death and of the subdivisions of the sites of cancer for which figures are published in the Registrar General's tables. An important change in the mode of assignment of cause of death occurred in 1940 whereby, if several diseases were mentioned on the death certificate, the cause of death was assigned according to the opinion of the certifying practitioner as to the underlying cause of death, whereas before it had been assigned by certain fixed rules of preferential selection.\* The effect of this was that from 1940, where cancer was shown among the causes of death upon the certificate, the death would no longer almost invariably be assigned to cancer as hitherto (only violent causes and certain rare infectious diseases taking priority) but would be assigned to one of the other diseases mentioned if that was in the opinion of the certifying practitioner the underlying cause of death. The assessment of the effect of these various changes is difficult, but Table XCII (page 191) provides comparative death rates over the five decades of the half-century adjusted as far as possible to take these changes into account. The figures for the first three decades, therefore, differ from those originally shown in the Statistical Reviews and especially those in the 1938-39 Text volume, since they have now been adjusted to the sixth revision of the International List of Causes of Death, whereas the latter were based on the fourth revision. The differences however are very small and have little effect upon the general trend or upon the arguments which are based upon them.

Table XCII shows that in men there has been a steady increase in the rate of mortality for all sites of cancer over the half-century. For women, however, the rate of mortality rose during the first three decades but has very distinctly declined during the last two. This difference of trend is largely the result of the different impact of the prodigious increase of carcinoma of the lung since the 1920's upon the two sexes. For males recorded mortality from cancer of the lung during the last decade was more than eighteen times as great as during the first decade of the century while for females the rate had only risen by some four and a half times.

Excluding cancer of lung, the rates take on a very different aspect and in each sex they increased over the first three decades and decreased over the latter two. The ratio between male and female death rates has however changed considerably. In the first decade female mortality from cancer (excluding lung) was greater than male in the proportion of 1·2 : 1, but during the 1920's the ratio changed and in the last three decades the male rate has been greater than the female, remaining approximately constant at 1 : 0·97.

Among females the most striking improvement has been in cancer of the uterus where the annual rate has fallen from 188 to 111 deaths per million during the fifty years. Cancer of the breast has shown very little change and, after an increase during the first two decades, the rate has remained comparatively steady.

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\* For a full explanation of the effects of this change, see pages 77-80 of the Statistical Review, Text, Vol. I Medical for 1940-45.

An examination of trends of cancer mortality without taking account of age does not give an adequate picture ; for accurate evaluation of the trends it is necessary to consider specific age groups. Accordingly, death rates by sex and age from cancer of various sites are being re-tabulated from 1936 onwards according to the Sixth Revision of the International Classification. The age-specific rates will be given for 32 sites and the current figures published for each subsequent year. The complete tables for 1936-52 will be published in the next volume. This volume contains a brief extract comprising lung, prostate, uterus and female breast, with the remaining sites consolidated under a single head.

For a comparison of the mortality from cancer between the two sexes it is advisable to exclude important forms of cancers peculiar to one sex, and also cancer of the lung which is increasing so rapidly as to overshadow all other changes.

Diagram 3 and Table XCIII (page 192) show death rates from cancer from 1936 to 1951 for various age groups, excluding lung, prostate (about 7 per cent of all male cancers), female breast and uterus (together about 30 per cent of female cancers). The remaining cancer mortality for the years 1936 to 1951, in the age groups 35-, 45-, 55-, 65-, and 75 and over for each sex is shown in Diagram 3, the graphs being drawn on a logarithmic scale to show proportionate increase or decrease in the mortality rates. For most age groups and in each sex mortality has tended to fall in a regular manner over these sixteen years. The fall has not been striking in the 35-44 age groups, but thereafter until 74 has been very constant. The curve, for both sexes over 75, follows a curious course. For the years 1936 to 1944 the rate was roughly parallel with those of younger groups, but between 1944 and 1946 a change occurred and thereafter cancer in the oldest group has risen.

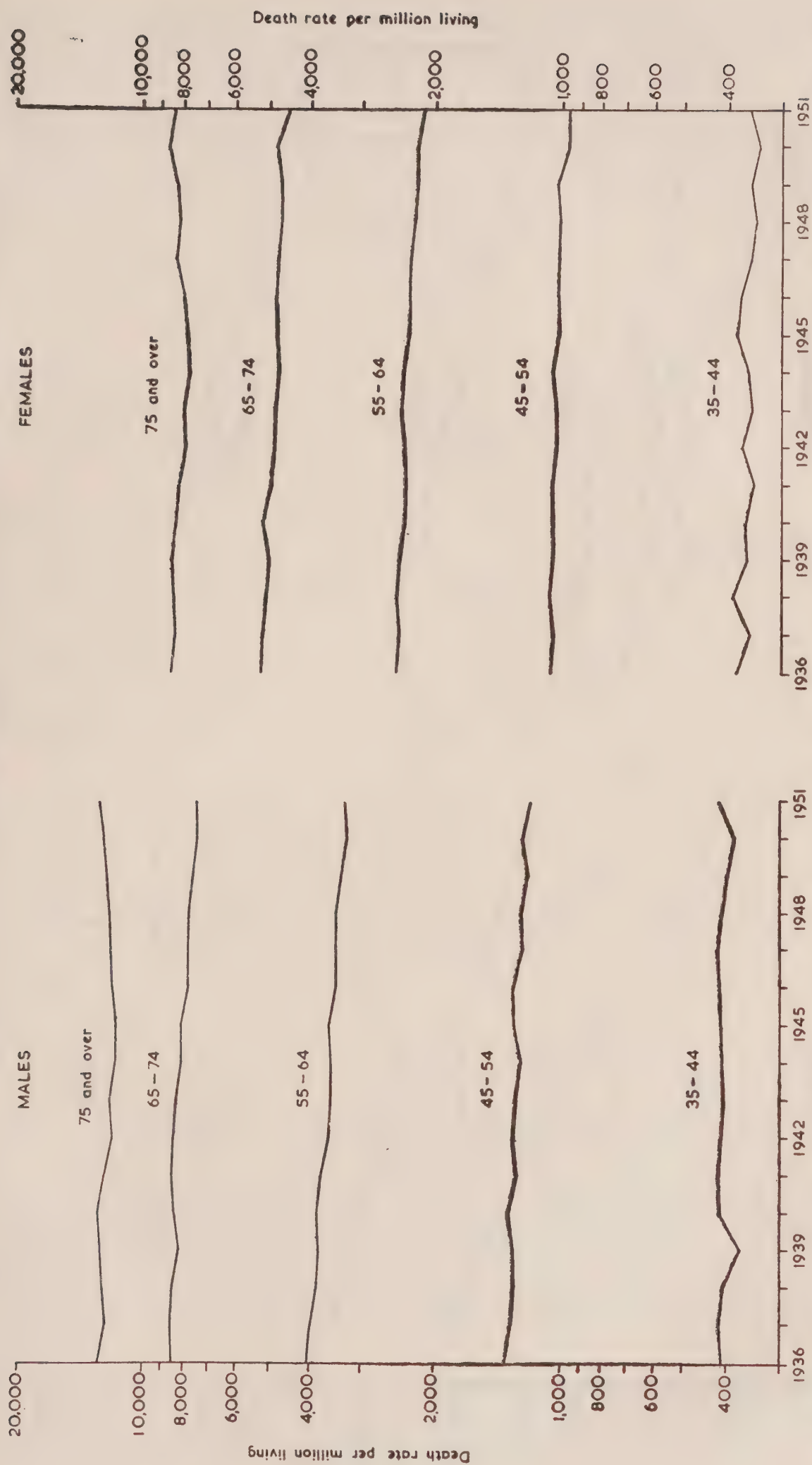
These graphs have been smoothed and straight line regression curves fitted, from which the annual percentage changes over the periods have been calculated. They are shown in the following table. On the whole these represent

Age Group	Average annual change in cancer mortality rate (1936 to 1951) shown as a percentage for different age groups :—	
	MALES All sites except lung and prostate	FEMALES All sites except lung, breast and uterus
35-.. .. .	—	—
45-.. .. .	-0.6	-0.4
55-.. .. .	-1.2	-0.8
65-.. .. .	-0.8	-0.8
75 and over .. .. .	—	—

a very hopeful picture, and show that rates have tended to fall except in the oldest age group. The reason for the increased mortality since 1946 in this group has not been discovered but the fact that this is the only age group in which the rate of mortality from cancer has recently increased tends somewhat to suggest that the life of those who suffer from cancer is being prolonged and that they die at a later age than formerly. Against this interpretation, however, are the facts that total mortality (all causes) at advanced ages in recent years has presented a similar trend, and that the regression curves are much influenced by exceptionally low mortality in 1944-45 and exceptionally high mortality in 1951.

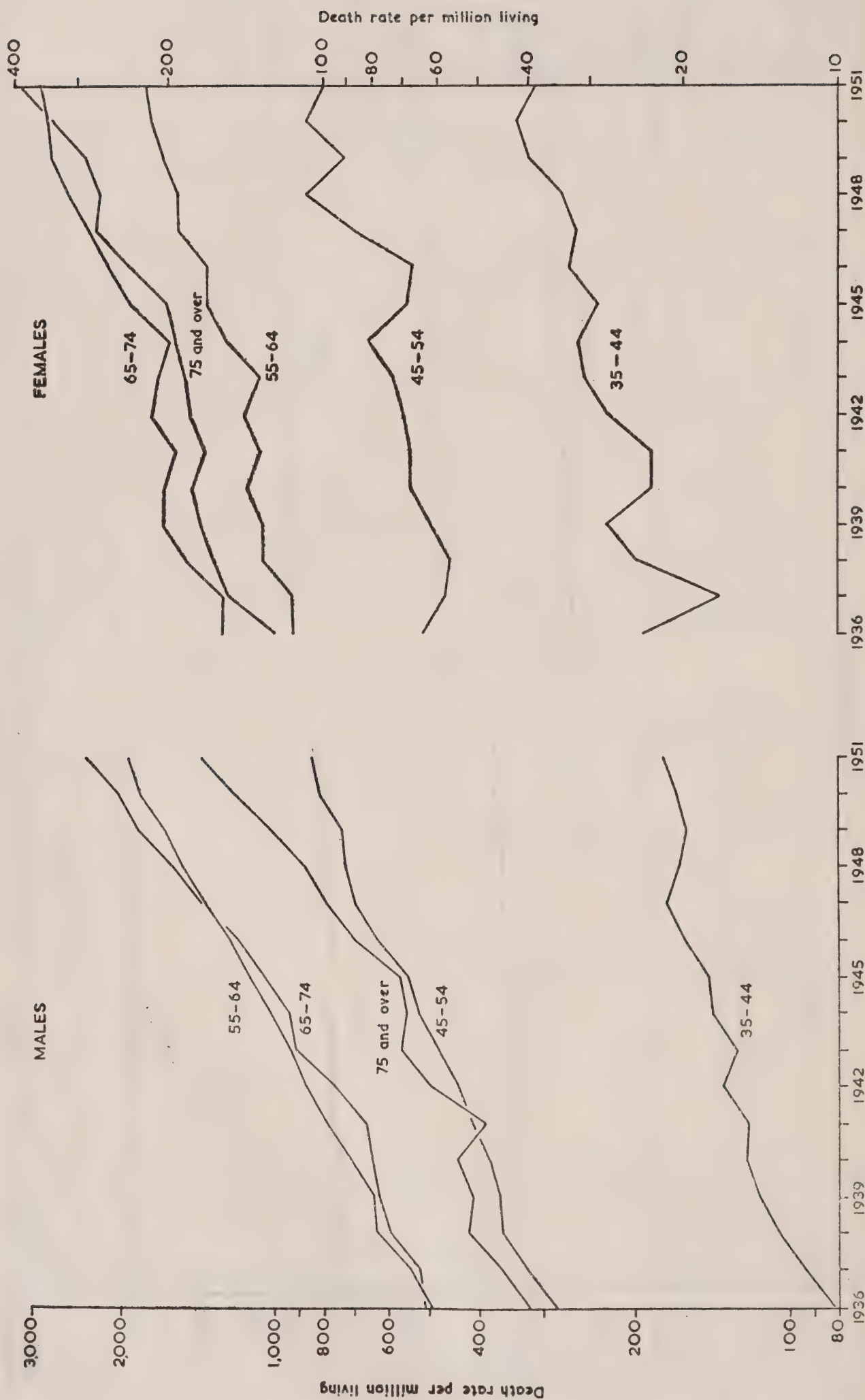


Diagram 3



England and Wales. Death rates per million living from cancer (including Hodgkin's disease, leukaemia and aleukaemia), by sex and age, 1936 to 1951: Males:—All sites except lung, bronchus, prostate. Females:—All sites except lung, bronchus, uterus, breast.

Diagram 4



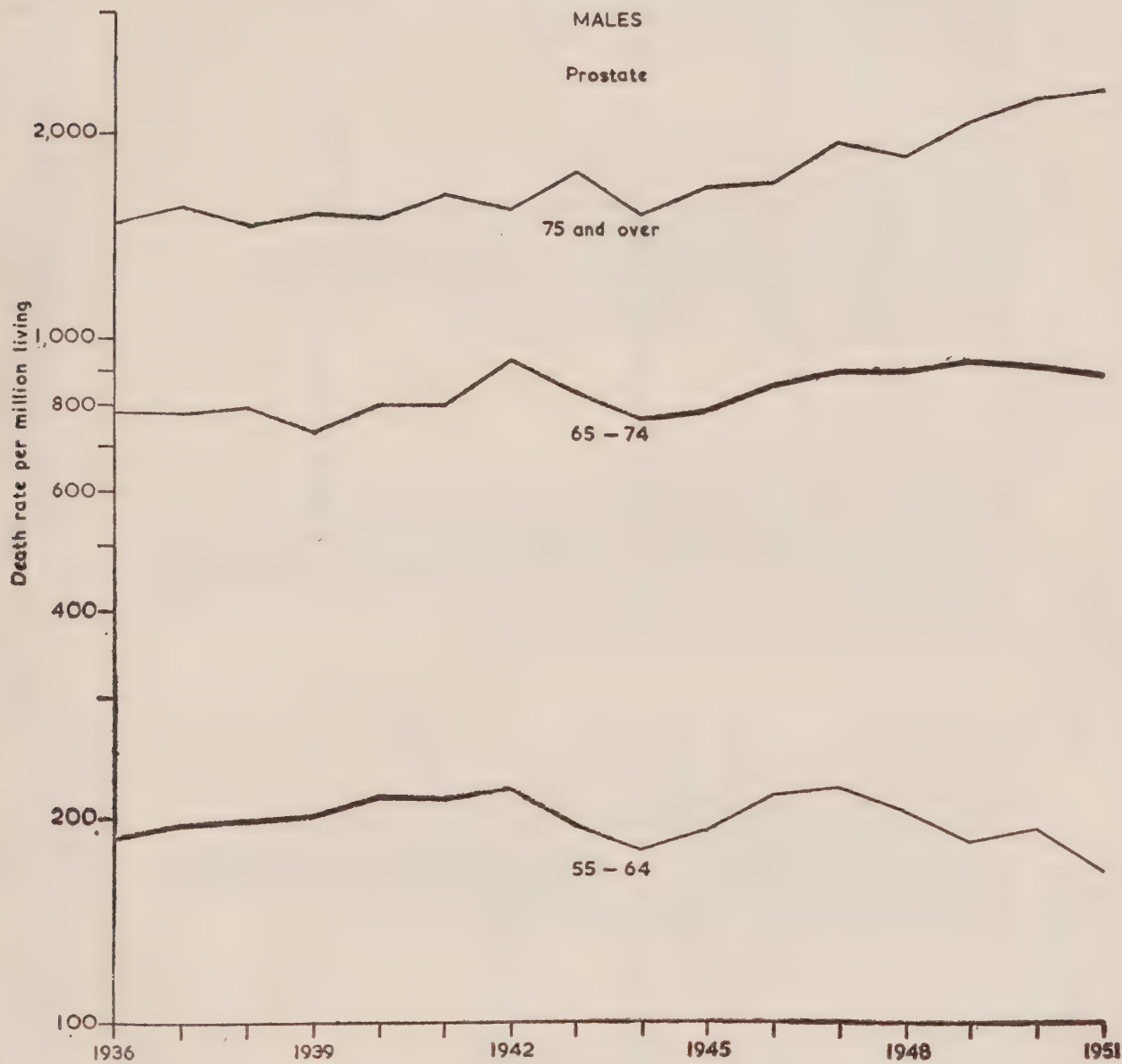
England and Wales. Death rates per million living from cancer of the lung and bronchus, by sex and age, 1936 to 1951.



Diagram 4 and Table XCIV (page 193) show for both sexes the course of the mortality rates for cancer of lung and bronchus. The rate of increase has been less among females than among males except in the older age groups where from about 1944 onwards the rate of increase in females has closely approximated to that of males.

Diagrams 5 and 6 and Table XCIV show the mortality rates for the other three cancer sites omitted from the main figures, i.e. prostate, uterus and female breast.

Diagram 5

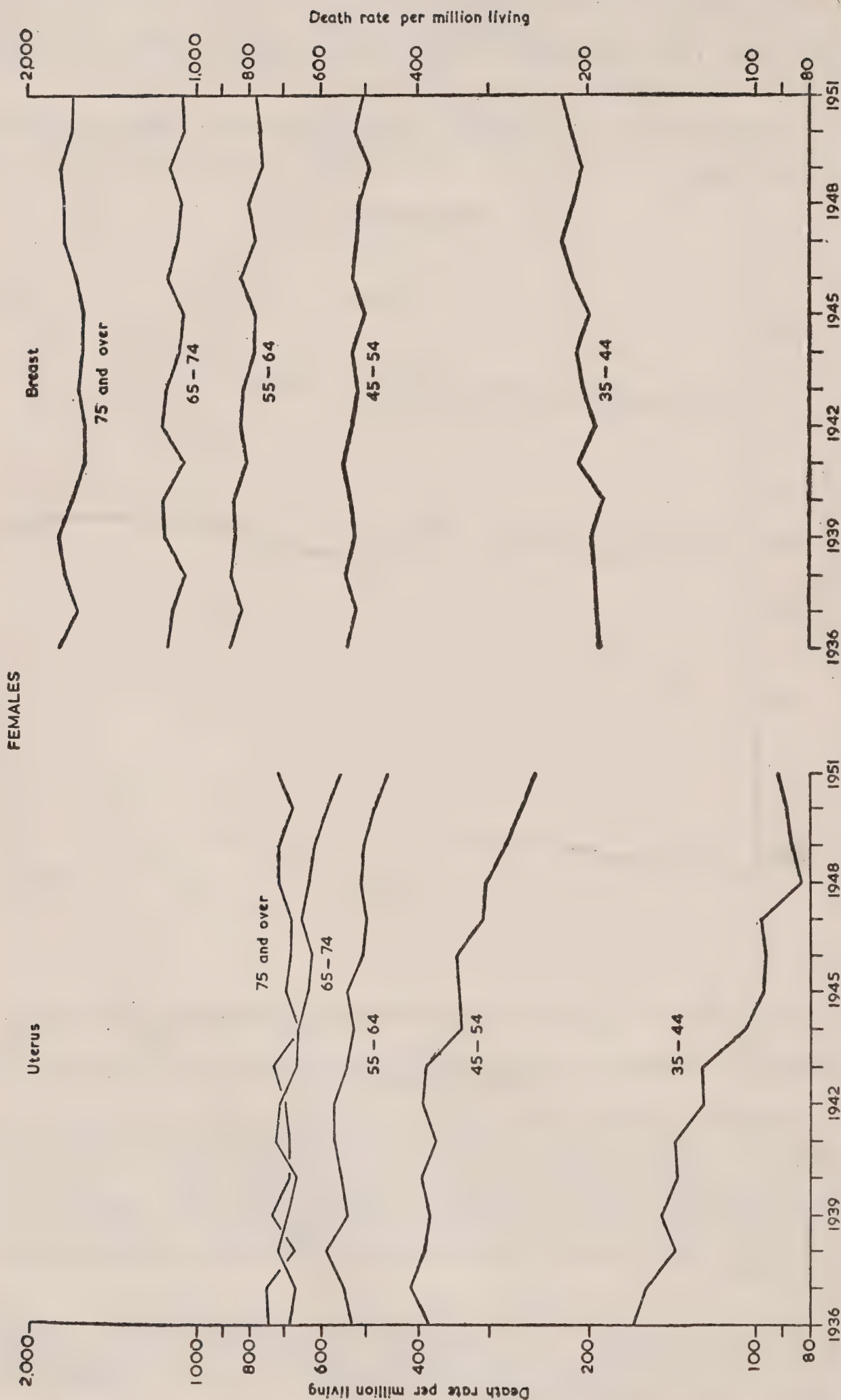


Cancer of the prostate : Death rates per million living at certain ages, England and Wales, 1936 to 1951.

Deaths from cancer of the prostate seem to have been increasing except perhaps during the last five or six years in the age group 55-64. The increase has been again most marked in the over 75 age group since 1944. Cancer of the female breast has shown an increase in the ages 35-44 (the immediate pre-menopausal group) which is not seen in older age groups. There was a fall in the death rate for the over 75 group during the first seven years and thereafter a slight rise.

Mortality from cancer of the uterus has shown a well sustained fall especially up to 54 years of age. The death rate at ages 35-44 now shows signs of becoming stable but above this age the mortality, especially during the last few years, has continued to decline.

Diagram 6



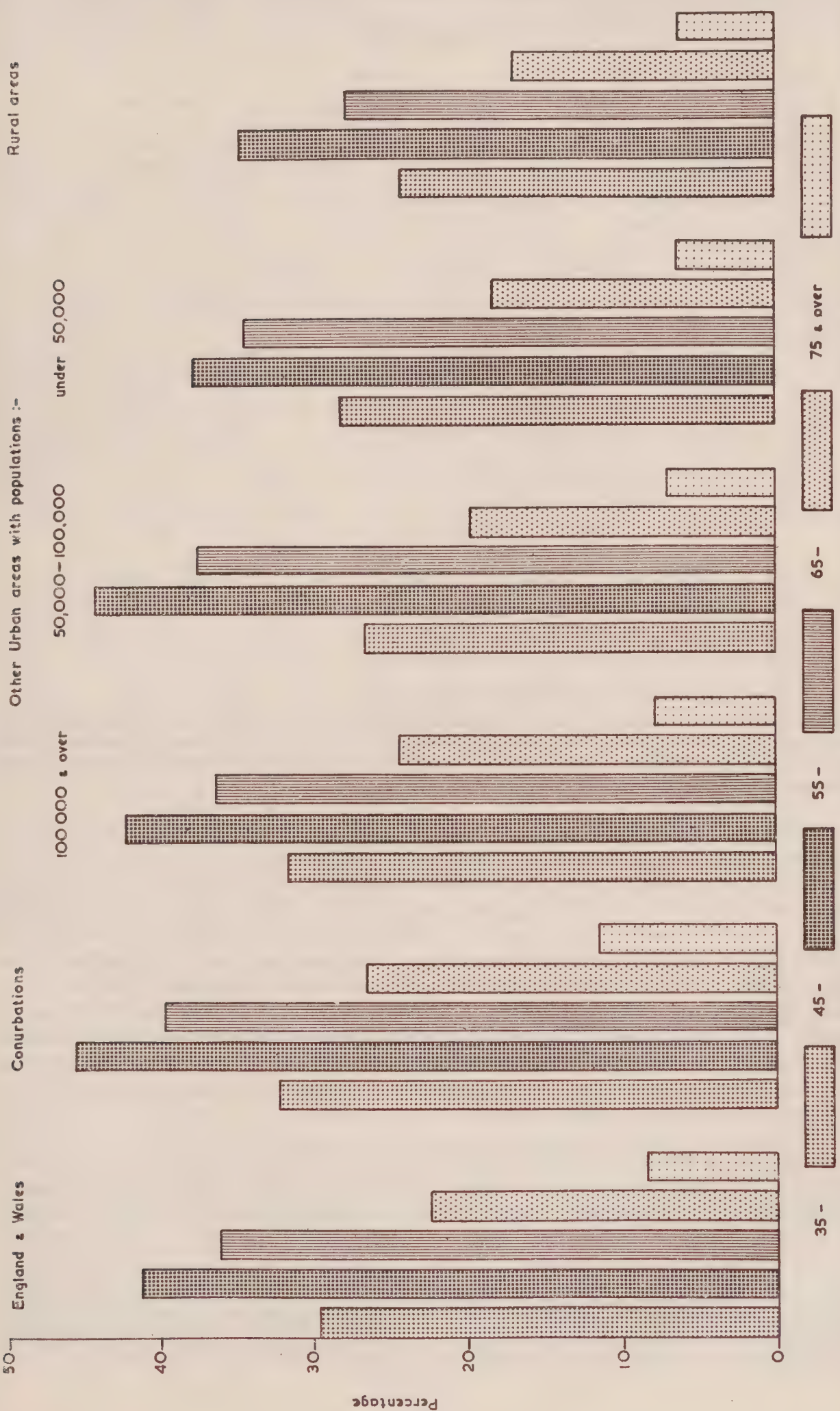
Cancer of the uterus and breast (females) : Death rates per million living at certain ages, England and Wales, 1936 to 1951.



Cancer of the Lung—Geographical and Urban/Rural Differences

Table XCIX (p. 196) and Table C (page 198) show death rates in 1951 by sex and age for cancer of all sites and for cancer of the lung, separately for

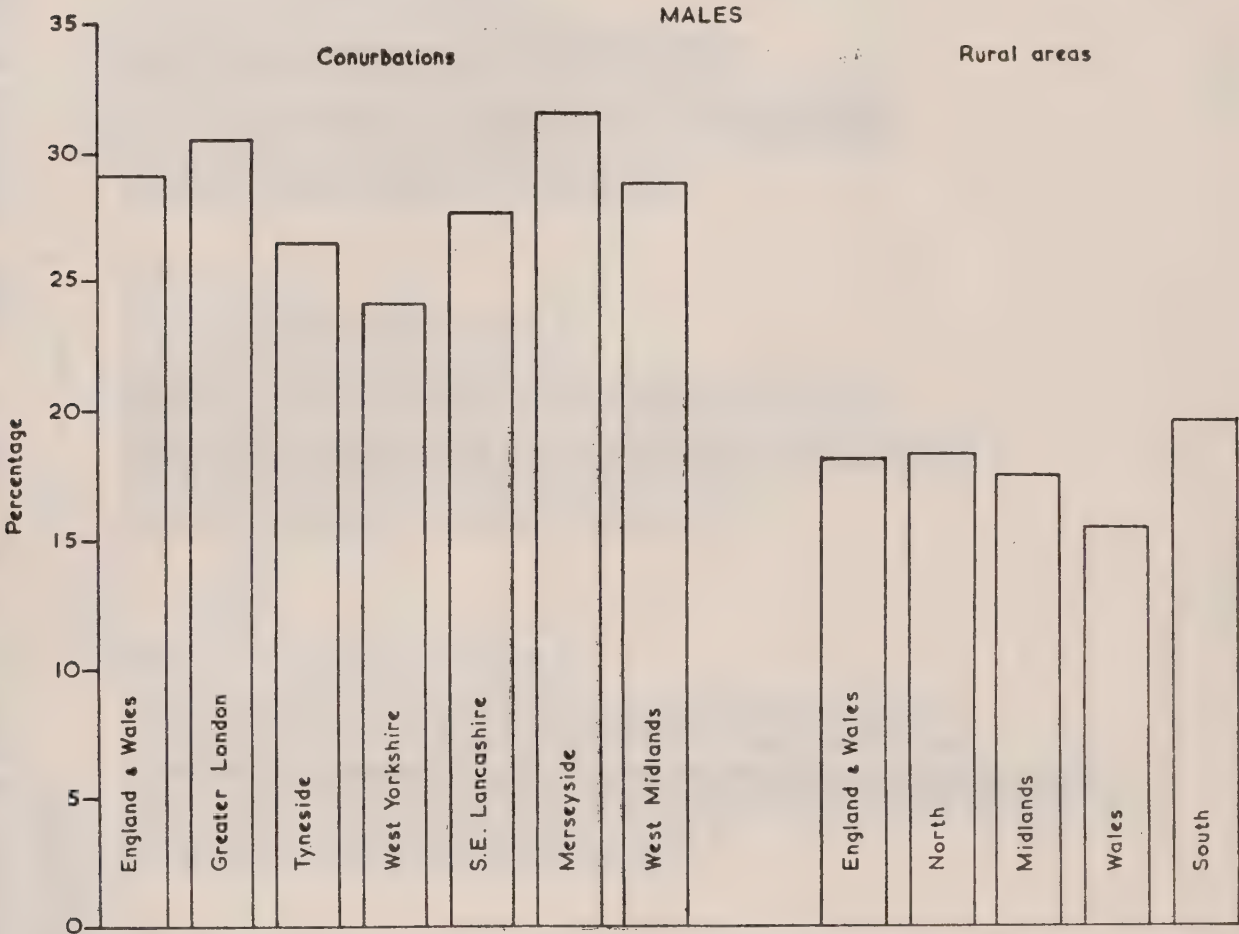
Diagram 7



Mortality from cancer of the lung and bronchus expressed as a percentage of mortality from cancer of all sites (including Hodgkin's disease, leukaemia and aleukæmia) for males at different ages. England and Wales, and national density aggregates, 1951.

conurbations,\* urban and rural areas, and for four groups of standard regions. In each case the crude death rates for all ages and the E.A.D.R. (see page 85) for the age group 0-34 and rates for the decennial age groups from 35 to 74 and 75 and over are given.

Diagram 8



Mortality from cancer of the lung and bronchus expressed as a percentage of mortality from cancer of all sites (including Hodgkin's disease, leukaemia and aleukemia) for males. Each conurbation and total conurbations and national and regional aggregates of rural areas, 1951.

Ratios of the death rates for cancer of the lung as compared with cancer of all sites are shown for males in Table XCV (page 194) and Diagrams 7 and 8. It is seen that (1) the ratios are greatest in the age group 45-54, the next highest ratios being found in the 55-64 group, and the two older groups, 65-74 and over 75, showing the lowest. (2) Cancer of the lung is a more common cause among cancer deaths in the conurbations than elsewhere and more common in the larger towns than the smaller, the rural areas showing relatively less cancer of the lung than any other grouping. (3) Where geographically the incidence of cancer of the lung is high, the incidence of cancer of all sites is also high. Greater London and the Merseyside conurbations have a greater proportion of cancer of the lung than elsewhere and, among the rural areas, the South of England has a higher incidence than other areas.

The ratios in Diagram 8 take no account of age groupings and a more detailed analysis is therefore shown in Table XCVI (page 194). The rates for cancer of the lung in the age groups 35-44 and 75 and over are based on comparatively few cases (Table C, page 198) and can have little influence on the general

\* "Conurbation" is a term used to describe an area of urban development where a number of separate towns have grown into each other and become linked by such factors as a common industrial or business interest, as a common centre of shopping, education, etc. For the detailed constitutions of the conurbations see explanatory notes on page xi.



rates. Even at ages 45–54 the variation from conurbation to conurbation is small and it is only in the two succeeding age groups that the differences are important. Thus, comparing the West Yorkshire conurbation, which has the lowest ratio and lowest mortality of cancer of the lung, with Greater London and Merseyside which have the highest, the greatest differences occur between ages 55 and 74.

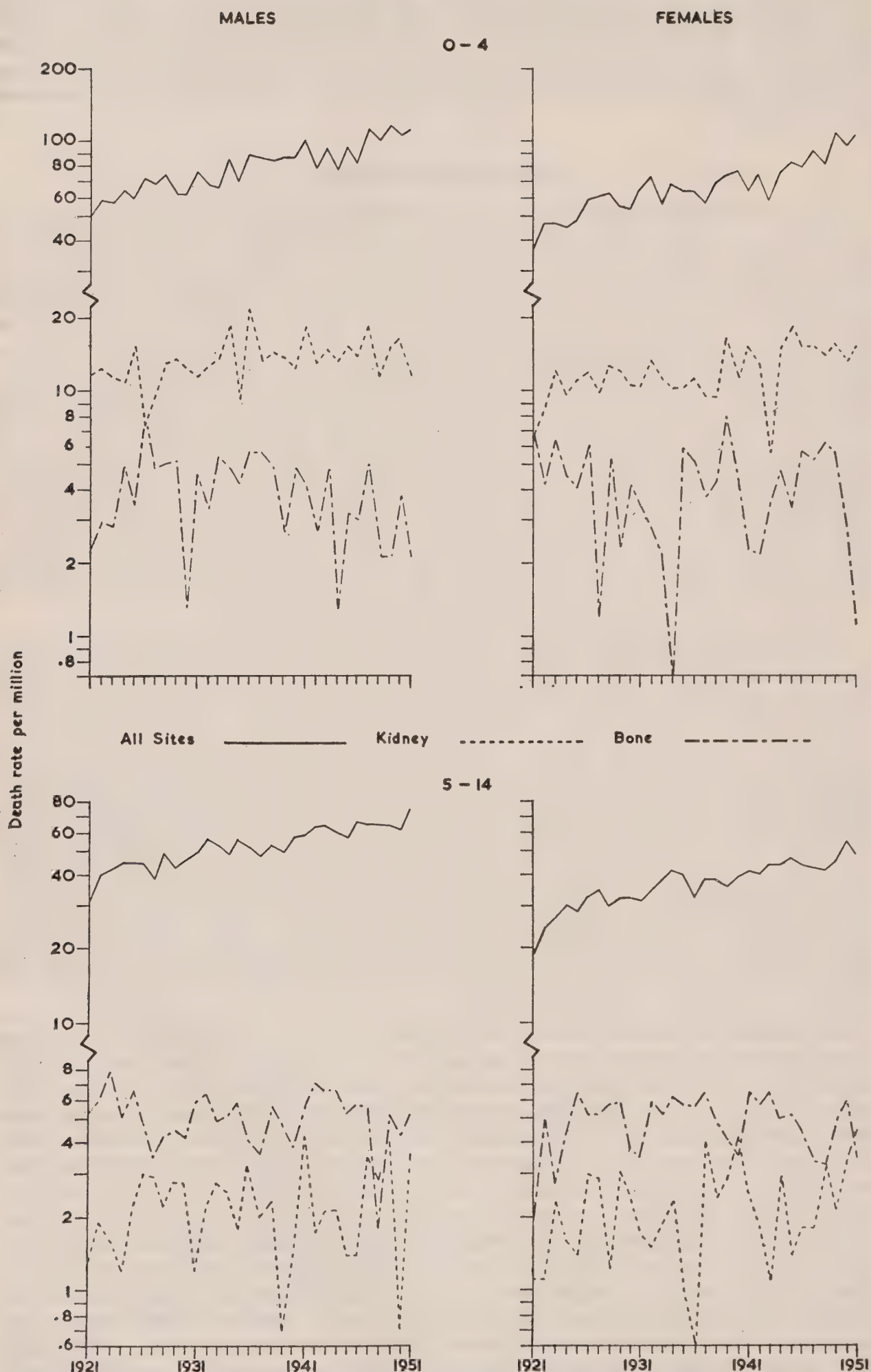
### Cancer in Children

In the 1950 Medical Text (page 20,—Principal Causes of Death at Different Ages) it was noted that “so much have other diseases retreated that cancer, not normally considered a serious risk to children, is now left in the field as a principal cause of death.” Owing to improvements in the fields of preventive and curative medicine many causes of death among children are tending to disappear or to assume negligible proportions ; for example general immunization has almost eliminated death from diphtheria, and the use of the sulphonamide group of drugs and the antibiotics has greatly reduced mortality from pneumonia and the diarrhoea and enteritis groups. The main causes of death in children are now changing from the infectious to the non-infectious types and consequently such diseases as cancer are assuming more and more importance. Between 1939 and 1949 the proportion of deaths among children under 15 *certified* due to cancer trebled and cancer now stands as one of the most important single causes of death in children. Whether the true mortality of neoplastic disease has risen equally is difficult to ascertain, owing to the changes in certification, classification, and improvements in diagnosis.

Table XCVII (page 195) shows death rates from cancer at ages 0–4 and 5–14 over the past 100 years. This table illustrates the drastic changes that can occur in mortality records of diseases when changes are made in classification or the method of assignment and, as here, no correction is made for those changes. The changes in the rules for assignment described on page 179 have had the effect since 1940 of diminishing the number of deaths assigned to cancer among children but this was more than offset by the changes in the classification whereby all gliomata (unless definitely specified as benign) were included among the cancers ; previously only those that were definitely specified as malignant had been included. The sixth revision of the International Classification, introduced in 1950, added leukæmia (and aleukæmia) and Hodgkin’s disease—diseases especially common among children—to the list of diseases included in the term cancer. These two additions account for much of the upward surge in the figure in 1950 and 1951.

To present as clear a picture as possible, rates have been calculated from 1921 onwards for cancer deaths among children at ages under 5 and 5 to 14 adjusted as necessary to the classification and method of cause selection in force in 1951. From these figures the graphs shown in diagrams 9 and 10 have been constructed. In this classification the most common site among the neoplastic tumours in children was the kidneys, which from 1921 to 1951 accounted for some 40 per cent of cases in the younger age group and about 20 per cent in the older ; cancer of the bone and brain each accounted for about 10 per cent of the deaths in the younger age group while bone was the site of 25 per cent of cancer deaths among the elder children and brain the site of about 12 per cent. Deaths from cancer of the kidney and bone are shown separately for both sexes and for both age groups ; cancer of the brain and its relation to the total number of gliomas is shown for one age group only (under 15) ; and the newly introduced components, the leukæmias and Hodgkin’s disease, are shown in separate diagrams for the two sexes, one for the two age groups and the other for the elder group only.

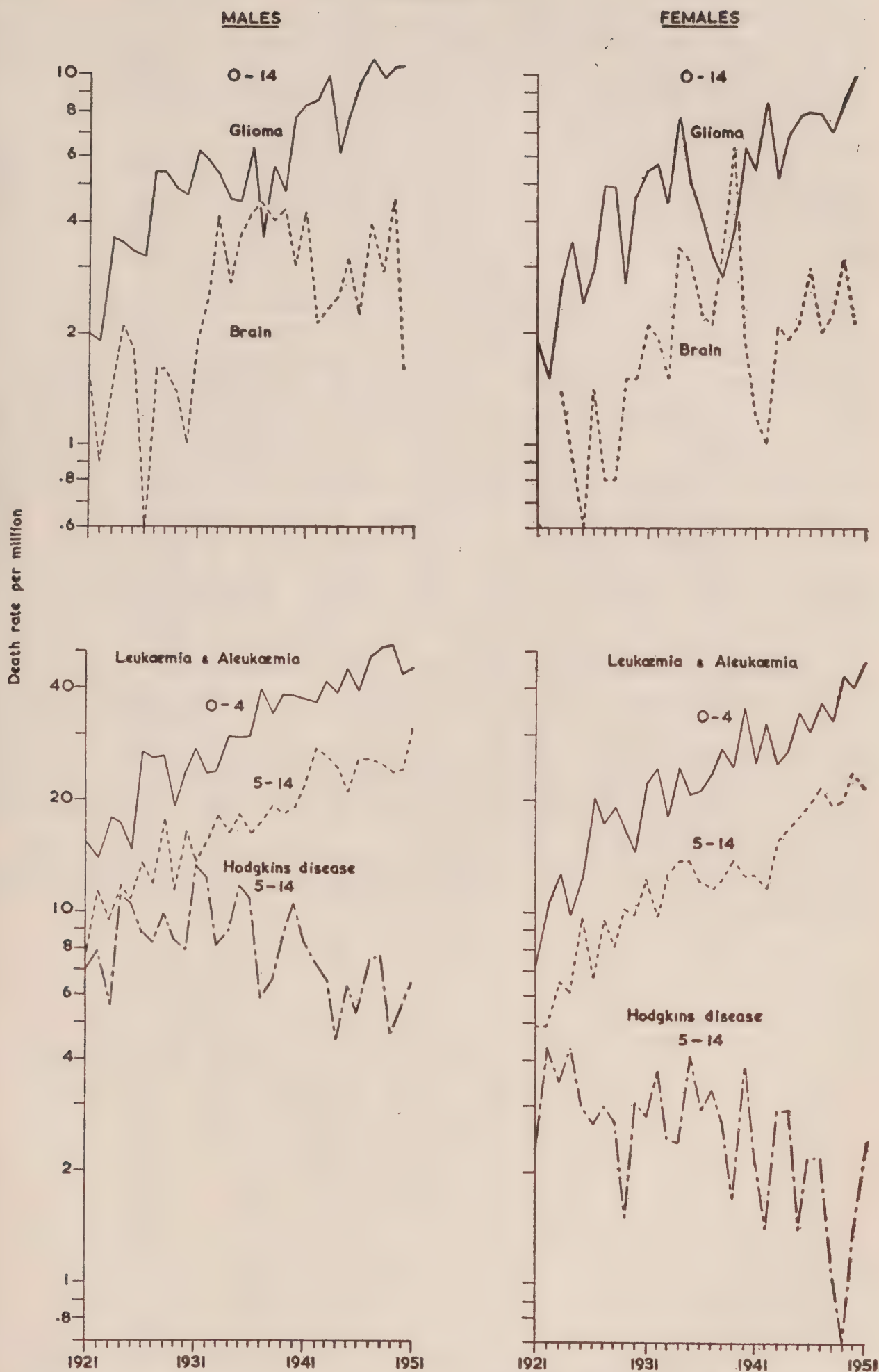
Diagram 9



England and Wales. Death rates per million living from cancer of all sites (including Hodgkin's disease, leukæmia and aleukæmia), kidney and bone of children aged 0-4 and 5-14 by sex, 1921 to 1951.



Diagram 10



England and Wales. Death rates of children per million living by sex, from glioma and cancer of the brain (excluding glioma) at ages 0-14 from leukæmia and aleukæmia at ages 0-4 and 5-14, and from Hodgkin's disease at ages 5-14, 1921 to 1951.

From the diagrams of cancer of all sites it is seen that there has been steady and regular increase throughout the thirty-year period ; the curves for cancer of all sites as recorded in 1921 [that is, excluding leukæmia and Hodgkin's disease, added in 1950, and the gliomas, etc. (except when specified as benign) added in 1940] have been plotted and smoothed and regression lines calculated which show that for males the average increase was just over 1 per cent per annum for the younger group while for the 5-14 group it was just under  $1\frac{1}{2}$  per cent, the increase for females being a fraction less (Table XCVIII, page 195). Though the numbers are few and normal variations introduce large fluctuations in the curves, it is seen that cancer of the kidney tended to rise slightly over the period while cancer of the bone tended to fall slightly. Cancer of the brain tended to rise until the late 1930's after which there was very little change. While these differences may reflect a real increase in the incidence of cancer, they may, as already indicated, be no more than a manifestation of improved diagnosis. The rate of increase of under 1.5 per cent per annum would not rule out the possibility of an improvement in diagnosis. The kidney is one of the less accessible sites and it may be presumed that better medical facilities and better means of expert consultation would tend to increase the diagnostic rate ; similarly the considerable increase in cancer of the brain in the earlier part of the period may have been the result of more careful examination with modern equipment which has made diagnosis of " convulsions " in these cases less likely. The incidence of Hodgkin's disease which in the past may have been confused with chronic tubercular adenitis or some of the more chronic forms of leukæmia is, despite the small number of cases, clearly falling. Turning to the figures for leukæmia we see that the mortality assigned to this disease has increased at a very rapid rate over the whole period. At ages under five the average annual increase for boys is over 7 per cent and for girls over 10 per cent, while for the group 5-14 the average increase is about  $5\frac{1}{2}$  per cent for boys and  $6\frac{1}{2}$  per cent for girls. Leukæmia is a disease that cannot easily be diagnosed without laboratory assistance and a steady increase accompanying the improvement of medical facilities strongly suggests that better observation and more frequent recourse to laboratory assistance may explain this rise. That is to say, probably the increase is more apparent than real.

Tables CI (page 200) and CII (page 201) show the unadjusted sex- and age-specific death rates from cancer, for different age groups of the population from 1936 onwards.



**Table XCII.—England and Wales. Cancer mortality : Rates per million population (standardized\*) for certain sites for each sex, 1901–10, 1911–20, 1921–30, 1931–39, and 1940–49**  
*(Figures adjusted so far as possible to the 1948 (6th Revision) classification)*

	All Sites (excluding Hodgkin's dis- ease, Leukæmia and Aleukæmia)		Tongue		Stomach		Rectum		Uterus		Breast		Lung and Bronchus		Leukæmia and Aleukæmia	
	M.	F.	M.	F.	M.	F.	M.	F.	F.		M.	F.	M.	F.	M.	F.
1901–10..	..	..	764	911	41	4	165	130	77	54	188	1	149	10	7	
1911–20..	..	..	875	927	48	4	183	136	91	57	169	1	161	13	7	10
1921–30..	..	..	975	948	44	4	217	151	102	57	153	2	177	25	9	12
1931–39..	..	..	1,027	931	32	3	229	149	107	55	128	2	186	84	21	17
1940–49..	..	..	1,073	892	19	3	219	131	107	55	111	2	184	187	30	23

\* According to the sex and age constitution of the 1901 population.

**Table XCIII.—England and Wales. Cancer mortality : Death rates per million living at certain ages from cancer of all sites except lung, bronchus, prostate (males) and all sites except lung, bronchus, breast, uterus (females). 1936 to 1951**

*(Based on the 1948 (6th Revision) classification.)*

	All sites except lung, bronchus, prostate					All sites except lung, bronchus, breast, uterus				
	Males					Females				
	35—	45—	55—	65—	75 and over	35—	45—	55—	65—	75 and over
1936	411	1,353	4,042	8,563	12,766	384	1,071	2,495	5,205	8,515
1937	419	1,305	3,979	8,586	12,336	357	1,058	2,452	5,179	8,323
1938	407	1,292	3,861	8,497	12,410	391	1,066	2,495	5,085	8,392
1939	371	1,291	3,793	8,182	12,618	360	1,052	2,430	4,997	8,432
1940	411	1,333	3,804	8,363	12,866	367	1,057	2,394	5,131	8,230
1941	419	1,279	3,722	8,445	12,279	348	1,055	2,365	4,929	8,177
1942	410	1,294	3,593	8,344	11,837	372	1,027	2,385	4,852	7,879
1943	406	1,278	3,557	8,233	11,930	352	1,026	2,399	4,834	7,946
1944	408	1,235	3,516	8,023	11,544	358	1,049	2,400	4,720	7,629
1945	410	1,277	3,599	8,026	11,508	381	1,019	2,328	4,796	7,787
1946	412	1,290	3,412	7,755	11,882	375	1,026	2,337	4,805	7,946
1947	419	1,211	3,426	7,785	11,910	353	1,026	2,306	4,738	8,293
1948	409	1,239	3,415	7,757	11,997	344	1,010	2,272	4,690	8,123
1949	399	1,195	3,318	7,590	12,123	356	1,027	2,231	4,698	8,245
1950	384	1,223	3,246	7,386	12,351	339	973	2,237	4,712	8,622
1951	412	1,187	3,293	7,389	12,718	355	968	2,160	4,532	8,460



Table XCIV.—England and Wales. Cancer mortality : Death rates per million living at certain ages from cancer of  
(a) lung, bronchus and pleura; (b) prostate (males); (c) uterus (females); (d) breast (females). 1936 to 1951  
(Based on the 1948 (6th Revision) classification.)

	Lung, bronchus, pleura										Prostate				Uterus				Breast							
											Males				Females				Females							
	35-	45-	55-	65-	75 and over	35-	45-	55-	65-	75 and over	25-	35-	45-	55-	65-	75 and over	25-	35-	45-	55-	65-	75 and over				
1936	82	286	496	499	323	24	62	114	156	124	25	187	782	1,480	25	168	384	536	685	746	32	190	544	865	1,126	1,769
1937	92	322	542	512	361	17	59	115	156	151	26	195	781	1,561	17	159	415	553	670	754	27	192	520	831	1,109	1,637
1938	106	365	631	599	426	25	58	131	184	165	25	199	796	1,480	21	140	387	593	716	666	27	194	547	866	1,054	1,714
1939	116	372	643	638	410	29	63	132	206	173	27	201	735	1,522	20	149	381	542	692	734	26	197	528	847	1,140	1,780
1940	121	387	716	656	443	23	68	141	205	180	24	217	801	1,504	21	139	395	559	665	686	29	188	535	855	1,145	1,680
1941	120	416	789	672	390	23	68	132	194	170	30	216	804	1,643	23	140	373	576	726	684	32	208	550	814	1,051	1,588
1942	135	442	868	774	503	28	70	142	217	181	28	222	937	1,567	19	125	392	573	709	695	32	194	531	834	1,158	1,580
1943	126	487	936	921	574	31	73	132	210	185	25	196	836	1,778	21	126	388	544	664	730	31	203	518	827	1,134	1,613
1944	141	529	1,019	953	560	32	82	154	200	195	25	181	766	1,508	28	104	339	528	660	658	27	210	530	786	1,085	1,599
1945	143	556	1,117	1,051	573	29	79	169	239	201	23	192	786	1,676	21	97	340	542	629	691	31	198	500	785	1,068	1,596
1946	160	639	1,229	1,184	705	33	77	169	261	238	27	217	859	1,698	22	96	344	508	620	680	32	211	531	834	1,122	1,629
1947	173	703	1,376	1,388	800	32	87	190	286	277	25	223	899	1,934	21	98	308	497	652	678	31	224	520	785	1,092	1,717
1948	163	737	1,520	1,589	878	34	109	191	311	273	19	206	899	1,857	20	84	303	513	632	717	30	211	514	804	1,082	1,712
1949	157	747	1,637	1,842	1,024	40	91	206	338	290	22	185	929	2,091	21	87	279	504	608	712	33	206	493	763	1,112	1,754
1950	165	822	1,837	2,027	1,205	42	107	214	344	336	21	192	912	2,264	23	89	261	485	587	675	31	215	522	770	1,052	1,675
1951	176	850	1,953	2,359	1,382	39	100	220	352	384	20	168	889	2,312	22	92	248	457	554	715	31	222	504	779	1,062	1,661

**Table XCV.—Mortality of males at certain ages from cancer of the lung, expressed as a percentage of mortality from cancer of all sites (including Hodgkin's disease, leukæmia and aleukæmia). England and Wales, total conurbations and population density aggregates, 1951**

	35–	45–	55–	65–	75 and over
<b>England and Wales</b> .. .. .	<b>29.6</b>	<b>41.3</b>	<b>36.1</b>	<b>22.2</b>	<b>8.4</b>
Conurbations .. .. .	32.3	45.5	39.7	26.5	11.5
Other urban areas with population of 100,000 and over .. .. .	31.6	42.2	36.4	24.2	7.7
Urban areas with population 50,000–100,000 ..	26.6	44.1	37.4	19.7	7.0
Urban areas with population under 50,000 ..	28.1	37.7	34.4	18.2	6.4
Rural areas .. .. .	24.2	34.6	27.6	16.9	6.1

**Table XCVI.—Mortality of males at certain ages from cancer of the lung, expressed as a percentage of mortality from cancer of all sites (including Hodgkin's disease, leukæmia and aleukæmia). Each conurbation, and four regional groups of rural areas, 1951**

	35–	45–	55–	65–	75 and over	All ages (from crude death rate)
<b>Conurbations :</b>						
Greater London .. .. .	30.8	45.7	41.8	28.7	12.6	30.7
West Yorkshire .. .. .	29.3	42.4	31.9	19.7	11.2	24.4
West Midlands .. .. .	38.6	42.1	38.6	25.6	9.8	28.9
Tyneside .. .. .	29.5	43.9	40.8	22.8	7.0	26.7
South East Lancashire .. .. .	31.5	43.7	39.5	23.1	9.5	27.9
Merseyside .. .. .	35.4	45.6	36.9	31.9	13.3	31.7
<b>Rural areas :</b>						
North of England .. .. .	27.6	35.7	27.9	13.3	5.7	18.4
Midlands .. .. .	22.8	37.0	27.6	16.2	4.7	17.6
South of England .. .. .	23.7	34.8	29.3	19.9	8.2	19.7
Wales .. .. .	20.7	23.3	22.4	16.5	3.8	15.6



**Table XCVII.—England and Wales. Cancer mortality. Death rates per million living at ages 0–4 and 5–14, by sex, 1851–1951**  
*(According to the classification of disease in force at the time)*

			Males		Females	
			0–4	5–14	0–4	5–14
1851–1860	..	..	21	9	23	9
1861–1870	..	..	13	8	13	7
1871–1880	..	..	13	8	12	7
1881–1890	..	..	21	12	19	10
1891–1900	..	..	33	18	28	14
1901–1910	..	..	36	18	29	14
1911–1920	..	..	35	17	29	13
1921–1930	..	..	35	18	32	15
1931–1939	..	..	42	22	36	17
1940–1949	..	..	50	32	46	24
1950–1951	..	..	107	68	99	52

(Source : 1851–1930—Registrar General’s Decennial Supplements.  
1931–1951—Registrar General’s Annual Statistical Reviews.)

**Table XCVIII.—England and Wales. Cancer and the leukæmias in children. Average annual rates of change of mortality rate, 1921–1951\* (expressed as a percentage of the 1921 rate)**

			Males		Females	
			0–4	5–14	0–4	5–14
			per cent	per cent	per cent	per cent
All sites (excluding leukæmia and aleukæmia and Hodgkin’s disease)	..		+1·0	+1·4	+0·9	+1·4
Leukæmia and aleukæmia	..	..	+7·2	+5·5	+10·2	+6·5

\* Adjusted to the classification and method of cause selection in force in 1951.

Table XCIX.—Cancer (6th revision, nos. 140–205): sex and age specific death rates per million living in four regional groups and conurbations and population density aggregates within groups. England and Wales, 1951

	Males						Females							
	E.A.D.R. 0-34	35- 45- 55- 65- 75 and over	Crude death rate (all ages)	E.A.D.R. 0-34	35- 45- 55- 65- 75 and over	Crude death rate (all ages)								
ENGLAND AND WALES..	114	591	2,057	5,414	10,638	16,412	2,120	102	708	1,820	3,616	6,499	11,220	1,822
Conurbations	118	634	2,313	5,931	11,721	18,352	2,246	96	699	1,909	3,679	6,757	11,991	1,830
Other urban areas: 100,000 and over..	112	649	2,243	5,941	11,583	17,973	2,268	120	779	1,803	3,648	6,867	11,091	1,837
Other urban areas: 50,000 and under 100,000	106	636	2,000	5,329	9,981	15,277	2,068	108	762	1,942	3,650	6,263	11,098	1,908
Other urban areas: under 50,000	119	548	1,911	5,170	10,131	15,587	2,122	98	686	1,782	3,635	6,411	10,804	1,855
Rural areas	104	488	1,579	4,345	9,014	14,154	1,809	103	679	1,621	3,418	5,923	10,464	1,720
NORTH OF ENGLAND (Northern, E. and W. Ridings, North Western)..	114	659	2,209	5,620	10,613	16,923	2,158	99	698	1,817	3,771	6,735	11,572	1,808
Tyneside conurbation	120	746	2,236	5,590	10,462	18,600	2,170	67	758	1,797	4,170	6,656	12,143	1,717
W. Yorks conurbation	111	516	2,118	5,590	11,093	16,571	2,259	94	644	1,852	4,009	6,728	11,250	1,963
S.E. Lancs conurbation	122	597	2,308	6,017	11,649	19,111	2,337	98	726	2,032	3,796	6,820	12,022	1,924
Merseyside conurbation	123	663	2,939	6,690	12,278	19,286	2,254	97	629	1,734	3,727	7,109	12,500	1,691
Total conurbations	119	608	2,366	5,973	11,447	18,333	2,276	92	687	1,892	3,888	6,832	11,900	1,857
Other urban areas: 100,000 and over	105	943	2,413	6,000	11,136	17,381	2,282	131	752	1,836	3,650	7,173	12,310	1,832
Other urban areas: 50,000 and under 100,000	119	740	2,391	5,685	9,314	14,867	2,104	101	750	2,050	4,206	6,304	12,048	1,871
Other urban areas: under 50,000	118	617	1,995	5,547	10,447	16,263	2,101	83	721	1,712	3,611	6,632	11,667	1,753
Rural areas	94	615	1,777	4,524	8,900	14,522	1,760	117	604	1,487	3,247	6,522	10,365	1,591



Table XCIX.—continued.

	Males						Females							
	E.A.D.R. 0-34	35- 44	45- 54	55- 64	65- 74	75 and over	Crude death rate (all ages)	E.A.D.R. 0-34	35- 44	45- 54	55- 64	65- 74	75 and over	Crude death rate (all ages)
MIDLAND AND EAST (North Midland, Midland, Eastern) .. ..	111	579	1,905	4,970	9,859	15,621	1,927	104	743	1,795	3,458	6,285	10,646	1,698
West Midlands conurbation .. ..	113	746	2,441	5,611	11,603	17,417	2,021	96	707	1,877	3,462	6,625	11,632	1,601
Other urban areas: 100,000 and over .. ..	124	559	2,186	6,045	10,897	18,167	2,156	117	781	1,797	3,571	6,659	11,325	1,789
Other urban areas: 50,000 and under 100,000 ..	80	630	1,757	4,915	9,400	17,000	1,801	119	904	1,849	3,310	6,467	10,348	1,758
Other urban areas: under 50,000.. ..	122	551	1,840	4,919	10,400	14,366	2,025	102	693	1,845	3,748	6,383	10,559	1,753
Rural areas .. ..	102	461	1,464	4,074	8,223	13,724	1,715	94	729	1,593	3,380	5,607	10,287	1,647
SOUTH OF ENGLAND (London and South Eastern, Southern, South Western) .. ..	115	553	2,067	5,482	11,050	16,665	2,205	102	703	1,829	3,522	6,342	11,200	1,900
Greater London conurbation .. ..	118	623	2,240	5,977	11,967	18,590	2,286	101	705	1,929	3,566	6,728	12,125	1,868
Other urban areas: 100,000 and over .. ..	104	524	2,111	5,722	12,239	16,261	2,355	122	887	1,804	3,385	6,464	10,784	1,918
Other urban areas: 50,000 and under 100,000..	124	564	2,167	5,440	11,297	13,737	2,347	101	644	2,039	3,608	5,869	11,361	2,123
Other urban areas: under 50,000.. ..	115	454	1,933	5,038	10,479	16,149	2,253	104	664	1,659	3,634	6,034	10,800	2,017
Rural areas .. ..	109	422	1,596	4,508	9,276	15,146	1,916	97	628	1,561	3,519	5,571	10,326	1,796
WALES .. ..	118	527	1,820	5,682	11,287	15,711	2,217	111	654	1,868	4,055	7,200	12,176	1,898
Urban areas: 100,000 and over .. ..	109	543	2,237	6,535	13,000	17,342	2,336	102	592	1,767	4,507	7,208	11,271	1,815
Urban areas: 50,000 and under 100,000 .. ..	—	500	1,957	8,000	16,923	13,000	2,214	114	500	2,264	4,000	5,909	7,692	1,594
Urban areas: under 50,000 .. ..	125	518	1,895	5,376	10,972	15,471	2,213	112	575	1,897	3,666	7,543	12,034	1,927
Rural areas .. ..	123	537	1,564	5,381	10,607	14,154	2,105	116	815	1,912	4,296	6,781	13,857	1,926

Table C.—Cancer of lung and bronchus (6th revision, nos. 162 and 163): sex and age specific death rates per million living in four regional groups and conurbations and population density aggregates within groups.  
England and Wales, 1951

	Males							Females						
	E.A.D.R. 0-34	35- 44	45- 54	55- 64	65- 74	75 and over	Crude death rate (all ages)	E.A.D.R. 0-34	35- 44	45- 54	55- 64	65- 74	75 and over	Crude death rate (all ages)
ENGLAND AND WALES	8	175	850	1,952	2,359	1,377	530	4	39	100	221	352	381	91
Conurbations	11	205	1,029	2,352	3,107	2,102	658	4	46	112	252	403	480	103
Other urban areas: 100,000 and over	9	205	946	2,162	2,800	1,384	596	4	38	101	205	427	264	90
Other urban areas: 50,000 and under 100,000	6	169	882	1,994	1,971	1,064	509	9	43	100	185	342	268	88
Other urban areas: under 50,000	7	154	720	1,778	1,843	993	461	2	31	102	208	306	384	88
Rural areas	2	118	546	1,199	1,526	867	330	4	30	67	198	256	323	73
NORTH OF ENGLAND (Northern, E. and W. Ridings, North Western)	10	208	921	1,941	2,216	1,367	539	4	40	103	217	343	339	87
Tyneside conurbation	5	220	982	2,282	2,385	1,300	580	5	65	119	319	406	214	99
W. Yorks conurbation	3	151	899	1,783	2,185	1,857	551	2	52	141	229	173	361	88
S.E. Lancs conurbation	18	188	1,006	2,379	2,689	1,815	652	5	36	70	276	405	304	97
Merseyside conurbation	19	235	1,341	2,466	3,917	2,571	715	3	19	106	247	418	375	87
Total conurbations	12	192	1,038	2,216	2,737	1,903	629	4	40	104	262	341	325	93
Other urban areas: 100,000 and over	9	369	967	2,076	2,737	1,190	607	7	54	117	214	453	310	99
Other urban areas: 50,000 and under 100,000	11	247	1,116	1,981	1,714	1,200	538	11	38	125	127	522	190	92
Other urban areas: under 50,000	10	163	762	1,742	1,718	842	38	1	53	111	186	325	392	86
Rural areas	2	170	634	1,261	1,183	826	324	3	7	53	140	149	456	53



Table C.—continued.

	Males						Females							
	E.A.D.R. 0-34	35- 44	45- 54	55- 64	65- 74	75 and over	Crude death rate (all ages)	E.A.D.R. 0-34	35- 44	45- 54	55- 64	65- 74	75 and over	Crude death rate (all ages)
MIDLAND AND EAST (North Midland, Midland, Eastern) .. ..														
West Midlands conurbation .. ..	10	167	731	1,756	2,087	1,026	451	6	39	83	220	315	293	80
Other urban areas: 100,000 and over .. ..	19	288	1,028	2,168	2,966	1,708	585	8	34	65	239	300	316	74
Other urban areas: 50,000 and under 100,000 ..	11	145	876	2,341	2,776	1,167	569	4	40	101	179	427	250	85
Other urban areas: under 50,000 .. ..	7	148	700	1,894	2,033	1,000	437	15	60	96	196	222	261	79
Rural areas .. ..	7	151	617	1,734	2,010	1,000	445	3	25	119	231	308	390	87
	5	105	541	1,125	1,330	643	302	5	47	41	247	287	241	76
SOUTH OF ENGLAND (London and South Eastern, Southern, South Western) .. ..														
Greater London conurbation .. ..	5	163	907	2,122	2,705	1,702	591	3	39	112	235	392	458	106
Other urban areas: 100,000 and over .. ..	7	192	1,023	2,500	3,435	2,340	701	3	53	130	246	476	614	119
Other urban areas: 50,000 and under 100,000 ..	8	175	939	2,014	2,870	1,696	613	3	17	112	187	348	216	82
Other urban areas: under 50,000 .. ..	—	115	1,015	2,140	2,297	1,000	576	4	33	92	243	295	333	98
Rural areas .. ..	5	143	831	1,917	1,968	1,191	520	4	27	78	246	340	376	101
WALES														
Urban areas: 100,000 and over .. ..	—	100	556	1,323	1,847	1,243	377	3	14	96	228	278	378	87
Urban areas: 50,000 and under 100,000 ..	1	117	624	1,729	2,046	763	444	—	31	66	152	276	353	66
Urban areas: under 50,000 .. ..	6	65	1,132	2,409	2,778	1,139	601	—	41	23	310	542	424	99
Rural areas .. ..	—	250	217	3,000	769	—	321	—	—	—	—	—	—	—
	—	145	618	1,703	1,995	765	446	—	—	90	123	171	466	59
	—	111	364	1,204	1,750	538	328	—	74	74	73	250	143	53

**Table CI.—Cancer\* : sex and age specific death rates per million living, and E.A.D.R. (ages 0–64). England and Wales, 1936–39, 1940–44 and each individual year, 1945 to 1951**

	1936– 1939	1940– 1944	1945	1946	1947	1948	1949	1950	1951
<b>Males</b>									
<b>Crude Death Rate (all ages) .. ..</b>	<b>1,635</b>	<b>1,743</b>	<b>1,844</b>	<b>1,876</b>	<b>1,928</b>	<b>1,963</b>	<b>1,991</b>	<b>2,058</b>	<b>2,120</b>
<b>E.A.D.R. (ages 0–64) ..</b>	<b>1,111</b>	<b>1,134</b>	<b>1,185</b>	<b>1,196</b>	<b>1,225</b>	<b>1,244</b>	<b>1,241</b>	<b>1,274</b>	<b>1,302</b>
0– .. ..	86	88	95	83	112	101	116	106	109
5– .. ..	51	61	57	67	65	65	64	62	74
15– .. ..	85	82	86	94	94	91	102	100	92
25– .. ..	175	169	189	184	190	169	180	177	178
35– .. ..	505	542	557	574	594	574	559	549	591
45– .. ..	1,673	1,762	1,856	1,956	1,940	1,995	1,964	2,066	2,057
55– .. ..	4,692	4,712	4,908	4,858	5,024	5,142	5,140	5,275	5,414
65– .. ..	9,791	9,909	9,864	9,799	10,071	10,246	10,362	10,324	10,638
75 and over ..	14,398	14,149	13,757	14,285	14,645	14,732	15,238	15,820	16,412
<b>Females</b>									
<b>Crude Death Rate (all ages) .. ..</b>	<b>1,632</b>	<b>1,697</b>	<b>1,738</b>	<b>1,773</b>	<b>1,792</b>	<b>1,799</b>	<b>1,819</b>	<b>1,840</b>	<b>1,822</b>
<b>E.A.D.R. (ages 0–64) ..</b>	<b>1,093</b>	<b>1,073</b>	<b>1,047</b>	<b>1,057</b>	<b>1,040</b>	<b>1,033</b>	<b>1,021</b>	<b>1,017</b>	<b>1,000</b>
0– .. ..	66	70	81	79	91	81	106	96	102
5– .. ..	36	41	46	43	42	41	45	56	49
15– .. ..	64	61	62	61	63	64	71	60	66
25– .. ..	182	192	191	188	186	177	188	194	191
35– .. ..	744	714	705	715	707	674	689	685	708
45– .. ..	2,049	2,025	1,937	1,977	1,941	1,936	1,889	1,863	1,820
55– .. ..	3,999	3,907	3,823	3,848	3,778	3,780	3,704	3,706	3,616
65– .. ..	7,089	6,891	6,732	6,808	6,769	6,715	6,757	6,695	6,499
75 and over ..	11,019	10,448	10,274	10,493	10,965	10,825	11,001	11,308	11,220

\* Up to and including 1948 : 5th Revision (Nos. 45–55 together with Hodgkin's Disease (44b) and Leukæmia and Aleukæmia (74)). 1949–1951 : 6th Revision (Nos. 140–205).



**Table CII.—Cancer\* : sex and age specific death rates per million living and E.A.D.R. (ages 0–64). England and Wales : Rates for 1940–44 and 1945 to 1951 expressed as percentages of the corresponding average rate over the period 1936–39**

				1936–1939	1940–1944	1945	1946	1947	1948	1949	1950	1951
				Males								
Crude Death Rate (all ages) .. ..				100	107	113	115	118	120	122	126	130
E.A.D.R. (ages 0–64) ..				100	102	107	108	110	112	112	115	117
0– .. ..				100	102	110	97	130	117	135	123	127
5– .. ..				100	120	112	131	127	127	125	122	145
15– .. ..				100	96	101	111	111	107	120	118	108
25– .. ..				100	97	108	105	109	97	103	101	102
35– .. ..				100	107	110	114	118	114	111	109	117
45– .. ..				100	105	111	117	116	119	117	123	123
55– .. ..				100	100	105	104	107	110	110	112	115
65– .. ..				100	101	101	100	103	105	106	105	109
75 and over ..				100	98	96	99	102	102	106	110	114
				Females								
Crude Death Rate (all ages) .. ..				100	104	106	109	110	110	111	113	112
E.A.D.R. (ages 0–64) ..				100	98	96	97	95	95	93	93	91
0– .. ..				100	106	123	120	138	123	161	145	155
5– .. ..				100	114	128	119	117	114	125	156	136
15– .. ..				100	95	97	95	98	100	111	94	103
25– .. ..				100	105	105	103	102	97	103	107	105
35– .. ..				100	95	95	96	95	91	93	92	95
45– .. ..				100	99	95	96	95	94	92	91	89
55– .. ..				100	98	96	96	94	95	93	93	90
65– .. ..				100	97	95	96	95	95	95	94	92
75 and over ..				100	95	93	95	100	98	100	103	102

\* Up to and including 1948 : 5th Revision (Nos. 45–55 together with Hodgkin’s Disease (44b) and Leukæmia and Aleukæmia (74)). 1949–1951 : 6th Revision (Nos. 140–205).

Table CIII.—Cancer (6th revision, nos. 140–205) : sex and age specific death rates per million living from cancer at various sites. England and Wales, 1951—Males

Int Class No. 6th Revision	Site or Organ	All ages	0–	5–	15–	25–	35–	45–	55–	65–	75–	85 and over
140	Lip .. .. .	49	—	—	1	1	4	15	75	275	720	881
141	Tongue .. .. .											
142	Salivary gland .. .. .											
143	Floor of mouth .. .. .											
144	Other parts of mouth and mouth unspecified .. .. .											
145	Oral mesopharynx .. .. .	25	—	2	0	1	6	15	52	133	284	238
146	Nasopharynx .. .. .											
147	Hypopharynx .. .. .											
148	Pharynx unspecified .. .. .											
150	Œsophagus .. .. .	71	—	—	—	3	8	41	157	400	768	814
151	Stomach .. .. .	387	—	—	2	14	90	354	1,015	2,110	3,064	2,746
152	Small intestine, including duodenum .. .. .	206	—	0	3	13	46	129	372	1,153	2,350	2,610
153	Large intestine, except rectum .. .. .											
154	Rectum .. .. .	172	—	—	3	6	35	101	354	981	1,834	2,085
155	Biliary passages and of liver (stated to be primary site) .. .. .	23	1	0	0	1	6	22	50	127	179	237
157	Pancreas .. .. .	77	—	—	—	3	20	63	211	389	656	678
161	Larynx .. .. .	38	—	—	0	0	3	23	98	215	387	356
162	Trachea and of bronchus and lung specified as primary .. .. .	530	1	0	4	22	175	850	1,952	2,359	1,448	729
163	Lung and bronchus, unspecified as to whether primary or secondary .. .. .											
170	Breast .. .. .	3	—	—	—	0	1	3	8	13	24	34
177	Prostate .. .. .	143	—	1	—	1	2	20	168	889	2,227	3,102
178	Testis .. .. .	9	1	0	5	17	15	8	9	17	24	—
179	Other and unspecified male genital organs .. .. .	8	—	—	—	—	2	6	16	36	109	119
180	Kidney .. .. .	113	12	4	2	4	23	101	298	589	901	1,068
181	Bladder and other urinary organs .. .. .											



Table CIII.—continued.

Int. Class No. 6th Revision	Site or organ	All ages	0—	5—	15—	25—	35—	45—	55—	65—	75—	85 and over
190	Skin (malignant melanoma) .. .. .	23	1	0	1	3	8	18	34	87	300	780
191	Skin (malignant neoplasm) .. .. .											
193	Malignant neoplasm of brain and other parts of nervous system .. .. .	35	24	10	9	17	37	65	95	47	20	—
194	Thyroid gland .. .. .	4	—	—	0	1	2	4	15	18	28	34
195	Other endocrine glands .. .. .	2	7	2	0	1	1	2	4	4	6	—
196	Bone (including jaw bone) .. .. .											
197	Connective tissue .. .. .	26	3	6	15	7	12	21	50	112	168	203
158	Peritoneum .. .. .											
164	Mediastinum .. .. .											
198	Secondary and unspecified malignant neoplasm of lymph nodes .. .. .	15	4	1	3	2	6	17	35	73	90	102
200	Lymphosarcoma and reticulosarcoma .. .. .	20	4	9	8	7	13	26	42	72	70	85
201	Hodgkin's disease .. .. .	22	1	7	13	21	24	35	38	51	31	34
202	Other forms of lymphoma (reticulosis) .. .. .	4	2	—	1	3	3	6	8	15	4	—
203	Multiple myeloma (plasmocytoma) .. .. .	7	—	—	—	—	5	11	27	32	13	—
204	Leukæmia and aleukæmia .. .. .	47	46	31	22	24	29	41	81	152	138	68
205	Mycosis fungoides .. .. .	1	—	—	—	—	—	1	3	1	2	—
Others in 140-205	Remaining sites .. .. .	58	4	1	1	5	15	59	147	286	440	576
140-205	Total .. .. .	2,120	109	74	92	178	591	2,057	5,414	10,638	16,280	17,627
193	Malignant neoplasm of brain and other parts of nervous system .. .. .											
223	Benign neoplasm of brain and other parts of nervous system .. .. .											
237	Neoplasm of unspecified nature of brain and other parts of nervous system .. .. .	61	37	17	16	31	56	115	168	97	41	—

Table CIV.—Cancer (6th revision, nos. 140-205) : sex and age specific death rates per million living from cancer at various sites. England and Wales, 1951—Females.

Int. Class No. 6th Revision	Site or organ	All ages	0-	5-	15-	25-	35-	45-	55-	65-	75-	85 and over
140	Lip .. .. .	15	1	1	0	2	3	8	23	57	107	235
141	Tongue .. .. .											
142	Salivary glands .. .. .											
143	Floor of mouth .. .. .											
144	Other parts of mouth and mouth unspecified .. .. .											
145	Oral mesopharynx .. .. .	13	—	1	—	1	6	20	30	41	54	83
146	Nasopharynx .. .. .											
147	Hypopharynx .. .. .											
148	Pharynx unspecified .. .. .											
150	Œsophagus .. .. .	37	—	—	—	2	6	20	71	164	279	318
151	Stomach .. .. .	286	1	—	3	12	54	160	448	1,220	2,392	2,667
152	Small intestine, including duodenum .. .. .	244	1	1	1	14	53	155	384	921	2,065	3,152
153	Large intestine, except rectum .. .. .											
154	Rectum .. .. .	106	—	—	2	6	27	74	193	434	770	917
155	Biliary passages and of liver (stated to be primary site) .. .. .	34	1	0	0	0	5	20	60	158	242	242
157	Pancreas .. .. .	60	—	—	1	1	6	42	110	272	415	576
161	Larynx .. .. .	9	—	—	—	1	4	9	18	37	41	61
162	Trachea and of bronchus and lung specified as primary .. .. .	91	2	0	2	11	39	100	221	352	396	288
163	Lung and bronchus, unspecified as to whether primary or secondary .. .. .											
170	Breast .. .. .	352	—	—	1	31	222	504	779	1,062	1,543	2,402
171	Cervix uteri .. .. .	114	—	—	—	18	73	178	297	314	392	394
172	Corpus uteri .. .. .	65	—	0	1	4	20	70	160	240	338	227
173	Other parts of uterus, including chorionepithelioma .. .. .											
174	Uterus unspecified .. .. .											
175	Ovary, Fallopian tube and broad ligament .. .. .	112	—	1	6	13	60	201	289	328	318	265
176	Other and unspecified female genital organs .. .. .	19	1	—	—	1	4	9	33	77	146	341



Table CIV.—continued.

Int. Class No. 6th Revision	Site or organ	All ages	0-	5-	15-	25-	35-	45-	55-	65-	75-	85 and over
180 181	Kidney Bladder and other urinary organs .. .. }	51	15	4	1	3	8	35	93	205	378	326
190 191	Skin (malignant melanoma) Skin (malignant neoplasm) .. .. }	18	—	—	1	4	9	11	24	50	150	432
193	Brain and other parts of nervous system ..	22	12	7	10	13	25	39	46	26	12	8
194	Thyroid gland .. ..	11	1	—	0	1	3	8	24	46	66	114
195	Other endocrine glands .. ..	2	11	1	0	—	1	2	2	3	1	—
196 197	Bone (including jaw bone) .. .. }	18	3	4	8	7	8	14	31	50	99	121
198	Connective tissue .. ..											
158 164 198	Peritoneum .. .. }	12	2	0	1	2	6	17	22	40	47	76
	Mediastinum .. .. }											
	Secondary and unspecified malignant neoplasm of lymph nodes.. .. }											
200	Lymphosarcoma and reticulosarcoma .. ..	13	2	2	2	6	7	14	26	39	58	61
201	Hodgkin's disease .. ..	12	1	2	6	15	14	12	20	24	24	30
202	Other forms of lymphoma (reticulosis) .. ..	2	2	1	—	1	1	2	7	5	7	—
203	Multiple myeloma (plasmocytoma) .. ..	7	—	—	0	0	2	7	21	27	17	8
204	Leukæmia and aleukæmia .. ..	41	47	21	15	18	28	42	70	104	101	38
205	Mycosis fungoides .. ..	0	—	—	—	—	0	0	0	—	1	—
Others in 140-205	Remaining sites .. ..	55	2	1	2	5	14	47	113	203	335	508
140-205	<b>Total</b> .. ..	<b>1,822</b>	<b>102</b>	<b>49</b>	<b>66</b>	<b>191</b>	<b>708</b>	<b>1,820</b>	<b>3,616</b>	<b>6,499</b>	<b>10,795</b>	<b>13,886</b>
193	Malignant neoplasm of brain and other parts of nervous system .. .. }	43										
223	Benign neoplasm of brain and other parts of nervous system .. .. }											
237	Neoplasm of unspecified nature of brain and other parts of nervous system .. .. }											

# DISEASES OF THE RESPIRATORY SYSTEM

## Influenza (480-483)

The general trend of mortality from influenza, though interrupted by epidemics of greater or less severity, has been downward since the pandemic of 1918-19. The C.M.I.'s. in successive quinquennia and in 1950 were :

1921-25	...	...	...	...	3.77
1926-30	...	...	...	...	3.54
1931-35	...	...	...	...	2.85
1936-39	...	...	...	...	2.01
1940-44	...	...	...	...	1.64
1945-49	...	...	...	...	0.70
1950	...	...	...	...	0.71

In 1951 there was a severe outbreak of influenza and the total deaths assigned to influenza increased to 15,809, compared with only 3,902 in 1950, and raised the C.M.I. to 2.87 for the year. No outbreak as serious as this had occurred since 1943 when there were 12,576 deaths and a C.M.I. of 2.65. While the epidemic did undoubtedly produce heavy mortality it is worth recording that the interval between 1943 and 1951 was the longest interval without the C.M.I. exceeding 2 since the index first fell below that level in 1928. Since 1927 the intervals (between years with a C.M.I. exceeding 2) have been 2, 2, 1, 1, 4, 3, 3, 8.

The incidence of influenza rose first in Newcastle at the end of December 1950 but this was rapidly overshadowed by an outbreak of much greater severity on Merseyside at the turn of the year. In subsequent weeks the epidemic reached the Midlands and the South but not with comparable severity. In Liverpool this epidemic was in three weeks the cause of the highest weekly death roll (apart from war deaths) since the cholera epidemic of 1849 (Semple, 1951).<sup>\*</sup> The epidemic had spent itself by the end of January and the high mortality was concentrated in a very short period ; in this period the medical services were severely taxed.

It will be seen from Table CV (page 209) that, as in other years of high influenza prevalence (Stocks 1935),<sup>†</sup> the mortality from bronchitis and especially from pneumonia in elderly persons was also raised, together with mortality from non-respiratory causes that are not so regularly affected by influenza epidemics. Unlike the 1943 outbreak, mortality was concentrated among older people, the rates at younger ages being little different from those of years with only minimal prevalence (Logan, 1951).<sup>‡</sup> This suggests that the mortality would have been much heavier but for the improved chemotherapeutic resources developed in the last few years. These improvements are naturally of less avail at advanced ages but probably save countless lives at younger ages.

An important feature of influenza mortality, as indicated by Table CVI (page 209), and remarked upon in the Medical Text for 1950, is the excess of

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<sup>\*</sup> Semple, A.B., 1951 ; *Proc. R.S.M.* 44, 794.

<sup>†</sup> Stocks, P., 1935 ; *Lancet*, ii, 386.

<sup>‡</sup> Logan, W. P. D., 1951 ; *Proc. R.S.M.*, 44, 789.



male mortality in the 45–64 age range and beyond. In 1951 the deaths in quinary age groups were :—

Age				Males	Females	Difference
40–	..	..	..	115	104	+11
45–	..	..	..	233	133	+100
50–	..	..	..	379	202	+177
55–	..	..	..	555	366	+189
60–	..	..	..	812	567	+245
65–	..	..	..	1,028	987	+41

The geographical distribution of influenza varies from epidemic to epidemic and to the extent to which prevalence is dependent upon the importation of virus from abroad it is affected by the actual port of entry and the paths of spread. In 1951 mortality was particularly high in the North Western Region and the Merseyside Conurbation where the main outbreak originated and spread rapidly. Mortality was also above average in Wales. The average death rate per million was 361. In Liverpool it was 719 and in Manchester 367. In Birmingham it was 263, Newcastle 329 and in Greater London only 220.

**Pneumonia (490–493, 763)**

There were 23,442 deaths from all forms of pneumonia in 1951 compared with 18,416 in 1950 and the largest number since the last serious influenza mortality year of 1943. The C.M.I. in 1951 was however only 0·67 indicating that mortality was still much below the level of earlier years. Notifications though notoriously incomplete totalled 43,259 compared with 30,663 in the previous year but the number of deaths per 100 notifications was reduced from 60 to 54.

Death rates by sex and age for the two main forms of pneumonia from 1931 to 1951, together with the C.M.I's., are shown in Table CVII (page 210). It will be seen that the full utilization of sulphonamides is marked in 1939 by a 31 per cent fall in the mortality of males from lobar pneumonia compared with the previous year ; the corresponding decline for females being 25 per cent. In 1951 the much heavier morbidity associated with the influenza outbreak increased the C.M.I. by 7 per cent for males and 5 per cent for females. Other forms of pneumonia, comprising for the most part broncho-pneumonia and pneumonia without further description, mainly affect young infants and elderly people and are more sensitive to adverse weather conditions and to rises in the general level of upper respiratory infection, but rapid decline in mortality can be seen. The two sexes have shared almost equally in the very great progress that has been achieved ; but naturally there has been less reduction in mortality at advanced ages. Naturally also the effect of the influenza outbreak was greater for this form of pneumonia, the C.M.I. in 1951 rising by 33 per cent for males and 31 per cent for females.

That a higher prevalence of respiratory disease is a concomitant of urbanization is illustrated by Table CVIII (page 212) ; the death rates are highest in the conurbations and lowest in the rural areas ; between the extremes there is at most ages a steady gradient in mortality. The mortality effects of the greater crowding and the atmospheric pollution of the industrial areas is expressed here by higher mortality rates from pneumonia at working ages in such industrial regions of the North and Midlands. At older ages the death rates are highest in Greater London.

## Bronchitis (500-502)

In this country bronchitis is a common cause of death ; in 1951, 36,985 deaths were assigned to this disease, of which 73·0 per cent were over the age of 65. Most of these deaths are described as due to chronic bronchitis often with mention of some cardiac condition. The death rate in a particular year is sensitive to weather conditions and to epidemics of upper respiratory infection or of influenza, and the increase in the rate in the influenza year of 1951 was to be expected. The reduction in mortality in recent years, as can be seen from Table CIX (page 214) has been greater for acute than for chronic bronchitis ; in males the C.M.I. for chronic bronchitis had risen very slightly in the last few years apart from the increase associated with the special conditions of 1951.

The geographical distribution of mortality from bronchitis shows the same Northern and Midland excess at all ages as was indicated for pneumonia, more especially for males ; and the same excess at advanced ages in Greater London.

It can be seen from the following figures that the tendency to ascribe a larger proportion of respiratory mortality in older persons (over age 65) to pneumonia, and less to bronchitis, than formerly, which was commented upon in the 1950 Text, has persisted.

Year	Total deaths from diseases of respiratory system at ages over 65 (excluding influenza)	Per cent assigned to	
		Pneumonia	Bronchitis
1940-44 ... ..	165,240	26·7	65·2
1945-49 ... ..	158,642	29·0	61·8
1950 ... ..	33,005	31·0	62·1
1951 ... ..	44,082	32·7	61·2

Similarly, as the following figures show, there has also been a general tendency to stress cardiac conditions in the certification of deaths of old people. This results in the assignment of more deaths either to heart disease or to pneumonia and fewer to bronchitis.

Year	Total deaths over age 65	Per cent assigned to		
		Heart disease	Pneumonia	Bronchitis
1940-44 ...	1,370,643	33	3	8
1945-49 ...	1,481,095	36	3	7
1950 ...	330,753	40	3	6
1951 ...	365,703	39	4	7



**Table CV.—Diseases of the respiratory system : Death rates per million living at ages 0–14, 15–44 and 45 and over from influenza ; at ages 65 and over from bronchitis, pneumonia and other respiratory diseases (excluding influenza) and from non-respiratory diseases, 1921 to 1951**  
*(Excluding non-civilians, 1939 to 1949)*

Year	Influenza			Bronchitis	Pneumonia	Other res- piratory diseases (excluding influenza)	All non- respiratory causes
	0–14	15–44	45 and over	65 and over			
1921 ...	121	129	564	8,773	2,704	950	58,611
1922 ...	305	289	1,338	10,781	3,088	1,018	61,410
1923 ...	83	107	565	8,541	2,765	948	58,380
1924 ...	229	205	1,257	9,760	2,947	949	60,003
1925 ...	117	141	858	9,002	3,023	969	61,051
1926 ...	91	104	573	7,461	2,563	857	59,692
1927 ...	252	222	1,440	8,275	2,953	904	61,934
1928 ...	71	93	480	5,531	2,409	760	61,823
1929 ...	261	250	1,948	7,959	3,513	898	66,771
1930 ...	42	52	318	4,417	2,272	648	61,145
1931 ...	141	139	898	5,674	2,680	763	64,743
1932 ...	113	114	840	4,506	2,525	686	64,885
1933 ...	160	238	1,408	4,541	2,465	688	64,022
1934 ...	46	55	340	3,512	2,380	599	63,065
1935 ...	57	71	445	3,152	2,238	614	63,800
1936 ...	47	53	367	3,410	2,367	596	65,865
1937 ...	113	144	1,165	3,355	2,436	591	65,086
1938 ...	42	45	279	2,395	2,062	484	62,691
1939 ...	57	62	555	2,744	2,098	497	65,830
1940 ...	88	76	691	7,817	2,678	927	66,594
1941 ...	59	43	413	5,720	2,352	671	60,868
1942 ...	36	23	193	4,365	1,889	577	56,728
1943 ...	77	57	780	5,075	2,328	638	56,343
1944 ...	39	19	226	4,164	1,806	561	56,231
1945 ...	33	15	148	4,457	1,790	604	56,478
1946 ...	44	27	305	4,246	1,939	604	57,489
1947 ...	31	15	188	4,743	2,214	661	60,211
1948 ...	16	7	64	3,643	1,762	616	54,855
1949 ...	27	20	334	4,544	2,406	739	60,155
1949* ...	21	20	334	4,446	2,406	471	60,521
1950* ...	17	18	222	4,279	2,139	475	61,670
1951* ...	28	32	969	5,609	2,996	554	64,393

\* According to the 6th Revision of the International Classification. Other years according to the classification in use at the time.

**Table CVI.—Influenza : Mean annual death rate\* per million living by sex and age, 1942–51**

	0–	15–	45–	65 and over	All ages
Males... ..	37	24	186	816	135
Females ...	31	23	102	801	134

\* The figures for the years 1942–48 include deaths from meningitis due to hæmophilus influenzae (340·0), most of which occurred in the 0–14 age group.

**Table CVII.—Pneumonia : Death rates per million living by sex and age and Comparative Mortality Indices, 1931 to 1951**

Year	0—	1—	5—	15—	25—	35—	45—	55—	65—	75 and over	C.M.I. All ages
	Lobar pneumonia—Males										
1931	880	275	62	124	170	356	525	705	948	1,229	1.11
1932	890	244	68	124	171	320	482	641	919	1,253	1.06
1933	904	272	65	116	167	341	498	652	799	1,146	1.04
1934	911	280	62	130	179	364	587	721	945	1,264	1.16
1935	912	215	55	103	160	332	533	737	827	1,126	1.06
1936	873	227	53	102	157	310	527	727	868	1,012	1.04
1937	938	245	54	91	159	316	540	759	803	1,075	1.05
1938	832	199	49	108	149	300	515	693	824	1,102	1.00
1939	657	131	26	44	67	142	327	526	701	1,122	0.69
1940	795	131	27	53	75	137	311	560	732	958	0.71
1941	1,014	154	27	41	50	137	295	544	717	1,014	0.70
1942	712	98	19	34	41	118	223	477	647	804	0.59
1943	784	77	19	26	37	106	246	478	655	1,057	0.62
1944	773	62	14	20	34	86	186	403	610	859	0.53
1945	746	51	11	21	28	65	158	347	540	824	0.46
1946	631	55	5	15	25	56	136	354	547	868	0.42
1947	546	60	6	15	23	55	139	349	528	938	0.42
1948	505	35	7	9	20	34	130	283	461	758	0.34
1949	491	30	7	8	16	33	96	273	480	877	0.33
1949*	413	30	7	8	16	33	96	273	480	877	0.33
1950*	286	25	5	12	16	33	97	239	459	787	0.30
1951*	269	16	5	11	12	32	96	247	511	988	0.32

**Lobar pneumonia—Females**

1931	717	242	66	76	101	173	206	338	567	965	1.31
1932	671	217	54	68	94	146	194	331	577	1,006	1.25
1933	539	239	52	61	87	160	186	320	514	921	1.18
1934	588	205	56	56	91	145	180	314	584	890	1.18
1935	542	193	48	58	84	141	174	289	534	783	1.10
1936	641	194	45	57	87	122	182	308	510	841	1.11
1937	631	200	41	46	77	133	181	288	513	875	1.09
1938	658	200	38	49	74	125	162	258	456	717	1.00
1939	538	103	27	39	50	70	116	215	372	698	0.75
1940	750	120	23	27	48	69	114	208	413	741	0.79
1941	754	113	18	31	41	68	103	214	412	710	0.76
1942	597	96	17	28	38	56	90	166	305	570	0.62
1943	682	94	18	39	46	59	106	173	375	660	0.72
1944	470	53	15	22	26	46	78	133	281	556	0.53
1945	600	59	9	18	26	37	68	123	275	544	0.51
1946	557	48	10	16	25	37	62	130	274	568	0.50
1947	525	40	9	15	21	27	63	131	267	622	0.50
1948	402	29	5	10	14	23	45	90	217	507	0.38
1949	343	24	5	9	16	26	44	104	269	607	0.43
1949*	303	24	5	9	16	26	44	104	269	607	0.42
1950*	214	19	8	8	13	21	39	90	235	574	0.37
1951*	253	17	4	5	17	21	41	98	248	614	0.39



Table CVII.—*continued.*

Year	0-	1-	5-	15-	25-	35-	45-	55-	65-	75 and over	C.M.I. All ages
Broncho and unspecified pneumonia—Males											
1931	12,794	2,119	113	73	100	229	433	696	1,640	3,777	1.43
1932	10,635	1,530	97	61	87	192	357	569	1,447	3,631	1.18
1933	10,183	1,638	110	58	97	237	431	671	1,394	3,724	1.23
1934	8,972	1,431	92	57	76	205	390	672	1,391	3,224	1.11
1935	9,050	1,089	65	54	81	172	352	600	1,397	3,211	1.04
1936	9,726	1,218	65	55	72	155	390	705	1,435	3,319	1.14
1937	10,378	1,233	61	43	62	161	410	776	1,494	3,622	1.21
1938	8,643	1,059	70	58	78	173	371	665	1,306	3,202	1.00
1939	7,650	631	46	36	48	113	291	595	1,102	2,935	0.89
1940	10,879	1,103	55	55	80	165	419	895	1,573	4,032	1.18
1941	11,361	908	53	45	59	126	312	728	1,252	3,277	1.02
1942	8,238	522	41	39	52	109	229	547	1,095	2,824	0.80
1943	9,051	551	42	37	40	108	285	619	1,310	3,456	0.94
1944	7,507	410	41	23	41	89	229	506	1,056	2,625	0.76
1945	7,904	386	36	26	37	66	200	524	1,013	2,664	0.75
1946	7,386	304	30	24	35	69	202	508	1,070	2,875	0.71
1947	7,293	325	28	28	32	70	208	535	1,224	3,643	0.80
1948	5,639	229	22	16	21	47	152	432	985	2,922	0.59
1949	5,299	234	16	27	26	57	167	527	1,345	3,948	0.68
1949*	5,723	234	16	27	26	57	167	527	1,345	3,948	0.68
1950*	4,849	182	29	17	29	46	142	395	1,096	3,680	0.58
1951*	5,451	160	18	17	28	59	171	622	1,673	5,342	0.77
Broncho and unspecified pneumonia—Females											
1931	9,413	1,815	111	48	86	154	244	494	1,374	3,452	1.53
1932	7,874	1,460	95	51	75	127	202	470	1,208	3,216	1.32
1933	7,556	1,467	98	42	75	153	248	480	1,217	3,358	1.35
1934	7,047	1,272	79	47	63	108	211	415	1,133	2,837	1.18
1935	7,151	997	66	38	63	105	184	401	1,037	2,661	1.10
1936	7,335	1,004	65	32	58	92	191	368	1,079	2,925	1.14
1937	7,154	1,109	57	32	59	123	225	445	1,098	3,116	1.21
1938	6,543	865	64	47	52	97	170	355	890	2,575	1.00
1939	5,869	581	46	35	55	87	148	368	962	3,012	0.97
1940	8,067	918	52	38	61	97	203	448	1,199	3,581	1.23
1941	9,060	817	56	39	54	81	153	341	982	3,251	1.12
1942	6,160	501	36	33	45	74	122	270	744	2,330	0.82
1943	6,890	529	40	36	57	90	144	339	899	3,166	1.01
1944	6,042	395	32	25	40	57	96	224	686	2,184	0.77
1945	6,493	351	28	24	36	56	92	233	712	2,216	0.77
1946	6,097	281	24	21	36	53	108	261	723	2,636	0.79
1947	5,642	286	25	21	24	50	108	268	789	3,176	0.86
1948	4,569	240	15	18	22	39	88	183	598	2,385	0.64
1949	4,242	214	20	16	33	50	92	282	912	3,504	0.81
1949*	4,503	214	20	16	33	50	92	282	912	3,504	0.80
1950*	4,018	188	19	16	25	50	92	226	711	3,219	0.70
1951*	4,290	171	17	13	23	37	99	294	1,033	4,811	0.92

\* According to the 6th Revision of the International Classification. Other years according to the 5th Revision.

**Table CVIII.—Pneumonia : Death rates per million living by sex at ages 15–44, 45–64 and 65 and over in standard regions and population density aggregates, 1951**

	15–		45–		65 and over	
	M.	F.	M.	F.	M.	F.
<b>ENGLAND AND WALES</b> .. ..	<b>55</b>	<b>40</b>	<b>516</b>	<b>254</b>	<b>3,452</b>	<b>2,681</b>
<b>Conurbations</b> .. .. .	58	38	599	285	4,322	3,196
<b>Areas outside conurbations</b> ..	53	42	463	233	2,990	2,377
Urban areas with populations of 100,000 and over .. .. .	66	46	643	305	3,835	3,011
Urban areas with populations of 50,000 and under 100,000 ..	60	39	477	239	3,316	2,697
Urban areas with populations under 50,000 .. .. .	51	45	443	212	2,670	2,102
Rural areas .. .. .	43	37	355	201	2,726	2,136
<b>NORTH OF ENGLAND</b>						
<b>Regions:</b>						
Northern .. .. .	66	42	530	209	2,629	2,034
East and West Ridings .. ..	78	39	558	292	3,211	2,352
North Western .. .. .	70	60	677	336	3,669	2,764
Total .. .. .	71	50	608	296	3,286	2,489
<b>Conurbations :</b>						
Tyneside .. .. .	88	32	628	208	3,472	2,109
West Yorkshire .. .. .	89	33	614	316	3,800	2,735
South East Lancashire .. ..	61	49	630	326	3,089	2,255
Merseyside .. .. .	73	80	957	491	6,400	5,127
Total .. .. .	74	50	689	341	3,977	2,947
<b>Areas outside conurbations:</b>						
Urban areas with populations of 100,000 and over .. .. .	104	64	825	385	3,649	2,606
Urban areas with populations of 50,000 and under 100,000 ..	58	34	585	294	2,840	2,493
Urban areas with populations under 50,000 .. .. .	60	49	473	186	2,452	1,940
Rural areas .. .. .	56	44	353	194	2,373	1,564
<b>MIDLANDS AND EASTERN</b>						
<b>Regions:</b>						
North Midland .. .. .	54	35	473	183	2,781	2,426
Midland .. .. .	59	33	606	286	3,785	2,539
Eastern .. .. .	40	34	402	252	3,368	2,834
Total .. .. .	52	34	505	244	3,333	2,601



Table CVIII.—continued.

	15–		45–		65 and over	
	M.	F.	M.	F.	M.	F.
<b>MIDLANDS AND EASTERN—contd.</b>						
<b>Conurbation:</b>						
West Midland .. .. .	54	34	733	317	4,293	2,619
<b>Areas outside conurbation:</b>						
Urban areas with populations of 100,000 and over .. .. .	49	28	599	260	3,915	3,115
Urban areas with populations of 50,000 and under 100,000 .. .. .	60	25	496	268	4,023	3,164
Urban areas with populations under 50,000 .. .. .	56	36	418	217	2,804	2,355
Rural areas .. .. .	47	38	373	193	2,750	2,309
<b>GREATER LONDON .. .. .</b>	<b>47</b>	<b>30</b>	<b>498</b>	<b>234</b>	<b>4,596</b>	<b>3,508</b>
<b>SOUTH OF ENGLAND</b>						
<b>Regions:</b>						
Remainder of South East .. .. .	45	32	313	220	3,036	2,256
Southern .. .. .	23	18	321	194	3,277	2,828
South Western .. .. .	58	58	475	259	3,203	2,435
Total .. .. .	42	37	376	226	3,171	2,490
Urban areas with populations of 100,000 and over .. .. .	48	41	485	318	4,174	3,425
Urban areas with populations of 50,000 and under 100,000 .. .. .	60	46	388	187	3,196	2,536
Urban areas with populations under 50,000 .. .. .	41	39	348	216	2,979	2,250
Rural areas .. .. .	36	28	344	205	3,017	2,291
<b>WALES .. .. .</b>	<b>45</b>	<b>64</b>	<b>560</b>	<b>217</b>	<b>2,560</b>	<b>2,000</b>
Urban areas with populations of 100,000 and over .. .. .	63	65	657	177	2,707	2,615
Urban areas with populations of 50,000 and under 100,000 .. .. .	77	222	597	—	4,348	1,714
Urban areas with populations under 50,000 .. .. .	44	68	659	243	2,613	1,662
Rural areas .. .. .	29	44	353	230	2,268	2,000

Table CIX.—Bronchitis : Death rates per million living by sex and age and Comparative Mortality Indices, 1931 to 1951  
(Excluding non-civilians, 1939 to 1949)

Year	Males										Females												
	0-	1-	5-	15-	25-	35-	45-	55-	65-	75 and over	C.M.I. (all ages)	0-	1-	5-	15-	25-	35-	45-	55-	65-	75 and over	C.M.I. (all ages)	
Acute Bronchitis																							
1931 ...	2,210	147	8	7	7	24	76	159	611	2,798	—	1,757	137	7	5	5	18	43	140	740	3,515	—	
1932 ...	1,834	103	5	2	4	20	41	117	463	2,102	—	1,399	115	5	3	3	13	37	102	495	2,643	—	
1933 ...	1,521	98	6	5	5	25	75	153	481	2,513	—	1,182	104	8	4	4	18	46	129	526	3,088	—	
1934 ...	1,504	95	6	2	3	16	52	109	380	1,780	—	1,081	97	5	3	3	12	22	82	434	2,062	—	
1935 ...	1,287	70	2	3	3	14	41	91	356	1,567	—	1,069	67	4	3	4	8	27	79	362	1,851	—	
1936 ...	1,332	82	4	3	5	16	57	138	431	1,833	1.36	1,021	74	8	3	5	11	23	95	411	1,935	1.40	
1937 ...	1,473	85	6	4	5	12	59	143	413	1,861	1.39	1,133	63	3	2	5	15	32	97	424	2,321	1.57	
1938 ...	1,172	72	2	3	4	10	34	102	268	1,347	1.00	828	46	4	3	3	7	18	49	262	1,484	1.00	
1939 ...	951	65	5	4	3	13	45	103	326	1,684	1.10	914	63	4	1	4	8	22	69	323	1,694	1.18	
1940 ...	1,892	131	11	9	17	56	216	539	1,159	3,912	2.16	1,373	98	8	6	11	28	101	304	1,103	4,329	2.03	
1941 ...	2,114	115	9	4	7	27	107	322	721	2,757	1.47	1,683	105	6	5	10	19	59	172	744	3,273	1.50	
1942 ...	1,202	78	8	5	10	26	102	294	668	2,284	1.24	941	56	5	6	8	11	35	130	521	2,223	1.01	
1943 ...	1,293	70	7	3	7	23	99	310	764	2,877	1.40	1,079	62	5	4	8	22	47	172	663	3,071	1.34	
1944 ...	1,091	44	6	4	6	19	88	259	593	1,933	1.08	896	51	4	3	6	11	33	101	423	1,852	0.86	
1945 ...	1,099	55	4	4	6	19	84	273	652	2,023	1.12	901	47	3	4	4	16	34	128	482	2,172	0.97	
1946 ...	1,008	45	4	4	6	20	76	232	535	1,920	0.98	657	38	4	5	7	12	25	104	425	2,105	0.88	
1947 ...	788	49	4	4	6	15	87	272	574	2,458	1.10	546	30	4	3	3	13	34	135	440	2,322	0.95	
1948 ...	689	36	5	3	4	9	46	169	423	1,311	0.69	493	29	3	2	1	8	20	60	259	1,329	0.55	
1949 ...	477	22	2	4	5	11	53	197	523	1,860	0.82	410	19	4	5	4	10	26	87	386	1,951	0.77	
1949*	467	19	2	4	5	11	52	197	512	1,834	0.81	399	19	4	4	4	10	25	88	384	1,943	0.77	
1950*	541	25	4	1	4	6	30	97	346	1,505	0.60	367	23	2	3	5	11	17	61	269	1,635	0.62	
1951*	540	28	4	2	4	8	46	164	520	2,257	0.87	427	31	3	3	3	7	19	87	423	2,328	0.87	



Table CIX.—continued.

Year	Males											Females											
	0-	1-	5-	15-	25-	35-	45-	55-	65-	75 and over	C.M.I. (all ages)	0-	1-	5-	15-	25-	35-	45-	55-	65-	75 and over	C.M.I. (all ages)	
Chronic Bronchitis																							
1931	26	12	5	12	26	91	248	527	1,490	4,820	—	27	3	6	11	11	20	70	242	952	3,219	—	
1932	33	16	6	16	19	82	210	431	1,244	3,934	—	27	9	4	8	14	22	60	195	720	2,664	—	
1933	14	11	6	14	27	78	249	478	1,235	3,873	—	14	9	4	11	13	27	75	208	688	2,579	—	
1934	18	12	6	16	20	56	220	470	1,120	3,274	—	15	9	4	9	15	23	47	164	635	2,094	—	
1935	14	8	8	19	26	79	217	408	1,048	3,333	—	7	11	5	13	12	28	44	152	538	1,926	—	
1936	27	8	4	18	18	60	250	522	1,161	3,590	1.23	18	8	5	11	14	23	58	176	621	2,072	1.40	
1937	34	10	6	19	21	69	255	543	1,136	3,279	1.21	18	6	5	10	14	23	61	189	578	1,958	1.35	
1938	23	13	7	16	31	45	196	433	929	2,809	1.00	10	8	6	11	13	18	45	121	412	1,505	1.00	
1939	26	6	5	21	22	61	236	552	1,067	3,075	1.16	14	6	6	13	12	25	53	161	474	1,803	1.21	
1940	61	16	9	27	48	156	737	1,970	3,642	9,616	1.72	42	20	10	21	26	55	163	629	1,927	6,490	1.82	
1941	39	27	8	20	38	119	520	1,446	2,762	7,638	1.31	22	17	5	17	15	42	123	394	1,368	4,985	1.32	
1942	56	18	8	20	36	105	449	1,255	2,314	5,998	1.10	21	12	6	18	18	35	95	281	1,026	3,555	0.98	
1943	36	18	7	20	40	108	492	1,351	2,495	6,521	1.20	22	13	4	14	22	46	113	337	1,145	3,983	1.11	
1944	28	15	6	19	37	100	441	1,411	2,495	5,778	1.16	15	7	6	13	23	39	110	299	1,009	3,360	0.96	
1945	31	8	8	16	33	101	488	1,527	2,798	5,747	1.22	21	12	5	12	19	39	123	367	1,116	3,413	1.03	
1946	25	9	7	15	32	98	461	1,526	2,729	5,713	1.18	12	10	7	13	18	41	103	336	1,034	3,295	0.97	
1947	22	15	5	11	28	93	495	1,690	3,157	6,786	1.33	14	11	9	10	19	47	123	329	1,120	3,465	1.03	
1948	20	7	8	11	24	75	414	1,462	2,991	5,410	1.15	16	14	5	13	17	37	94	278	880	2,822	0.83	
1949	13	7	3	12	21	82	470	1,686	3,419	6,245	1.31	11	7	5	12	15	39	112	363	1,192	3,516	1.06	
1949*	11	1	2	3	8	61	413	1,618	3,362	6,563	1.31	3	2	1	2	6	22	92	324	1,146	3,705	1.06	
1950*	39	26	2	3	8	62	426	1,727	3,634	6,938	1.36	18	1	0	3	5	22	79	325	1,141	3,787	1.02	
1951*	43	4	2	3	10	79	538	2,172	4,736	9,023	1.74	24	3	1	2	8	28	108	465	1,441	4,802	1.32	

Table CIX.—continued.

Year	Males											Females											
											C.M.I. (All ages)											75 and over	C.M.I. (All ages)
	0-	1-	5-	15-	25-	35-	45-	55-	65-	75 and over	0-	1-	5-	15-	25-	35-	45-	55-	65-	75 and over	C.M.I. (All ages)		
Bronchitis Unqualified																							
1931 ...	2,026	125	5	4	10	34	127	277	1,233	6,120	—	1,497	95	5	5	6	14	49	197	1,021	6,371	—	
1932 ...	1,639	88	4	2	11	25	81	203	827	4,985	—	1,460	84	6	3	4	11	33	129	687	4,825	—	
1933 ...	1,362	73	5	4	7	28	110	225	827	4,611	—	1,107	71	4	4	6	16	35	136	701	4,753	—	
1934 ...	1,110	60	3	4	4	18	76	188	642	3,534	—	777	67	1	6	6	10	30	91	520	3,252	—	
1935 ...	1,038	44	3	3	3	17	68	165	557	3,220	—	823	57	3	2	3	10	24	85	421	2,760	—	
1936 ...	1,096	38	3	2	7	21	91	198	562	3,345	—	690	42	4	2	2	12	24	89	431	2,980	—	
1937 ...	929	44	3	2	5	18	82	169	554	3,158	—	684	40	3	3	3	8	27	94	439	2,860	—	
1938 ...	710	31	4	2	0	11	54	146	399	2,181	—	522	36	3	2	3	4	16	50	253	1,894	—	
1939 ...	628	34	2	1	5	14	63	167	412	2,172	—	491	41	2	1	3	6	15	61	294	2,109	—	
1940 ...	1,215	92	3	6	12	47	208	592	1,210	3,518	—	845	77	3	5	10	26	65	258	939	3,234	—	
1941 ...	1,536	68	5	5	5	29	121	397	856	2,314	—	1,108	50	2	6	5	10	47	141	571	2,347	—	
1942 ...	828	29	3	2	6	20	88	296	655	1,941	—	566	27	2	2	4	11	39	107	389	1,538	—	
1943 ...	835	36	4	2	4	19	108	302	681	1,987	—	513	38	2	1	3	12	33	107	501	1,908	—	
1944 ...	680	30	2	2	4	15	85	265	598	1,649	—	464	23	1	3	5	9	29	87	360	1,436	—	
1945 ...	630	18	3	3	3	16	84	281	601	1,834	—	437	18	2	3	5	8	22	107	358	1,435	—	
1946 ...	458	16	1	1	3	14	68	246	501	1,631	—	331	14	1	2	6	7	24	83	307	1,428	—	
1947 ...	327	18	1	2	5	11	63	246	531	1,857	—	296	21	2	1	3	6	21	80	329	1,492	—	
1948 ...	226	16	1	3	2	7	46	185	420	1,252	—	217	8	1	2	2	5	13	55	209	988	—	
1949 ...	288	8	1	2	2	8	40	206	505	1,505	—	191	7	1	1	1	5	18	69	270	1,254	—	
1949*	269	9	1	2	2	5	26	147	396	1,137	—	171	7	1	1	2	4	14	61	249	1,025	—	
1950*	216	13	2	0	1	4	18	98	316	933	—	182	10	2	0	1	2	11	45	172	775	—	
1951*	159	14	0	0	1	5	28	129	387	1,153	—	152	7	0	1	2	6	15	57	242	1,023	—	

\*According to the 6th Revision of the International Classification. Other years according to the classification in use at the time.



# DISEASES OF THE CIRCULATORY SYSTEM

## Statistical Classification

The classification of diseases of the circulatory system, that was adopted at the Sixth Revision (1948) of the International Statistical Classification, and brought into use in this country in 1950, has introduced a number of important changes from the classification used previously. As for other causes of death a dual tabulation in 1949 of deaths from circulatory causes, classified by both the Fifth and Sixth Revisions, has permitted comparison between the two classifications, and indicates the changes recently introduced, (Table CX, page 221). In their totality these resulted, in 1949, in the transfer to one or another of the rubrics in the circulatory diseases section of some 4,000 deaths previously assigned to other causes, an increase of 2·3 per cent. This increase is accounted for by the inclusion now within this section of a number of diseases previously classified elsewhere, including rheumatic fever (without heart involvement No. 400 ; with heart involvement No. 401 ; chorea No. 402), aortic aneurysm specified as non-syphilitic (No. 451), hypertensive or arterio-sclerotic nephritis (Nos. 442, 446) and pulmonary embolism (No. 465). Several other items within the section, though possessing similar titles in the Fifth and Sixth Revisions have been allocated widely different numbers of deaths ; e.g. Sixth Revision Nos. 440–447 (hypertension) were assigned almost 17,000 deaths whereas Fifth Revision No. 102 (high blood pressure) was assigned little over 6,000 deaths.

## Mortality Trends

The considerable revision that the disease entities within this section have undergone has introduced problems in presenting uniformly comparable series of mortality statistics for some of these cardio-vascular causes for the years before and following the introduction of the new classification. With the assistance of the World Health Organization Centre for Classification of Diseases it was possible, on the basis of the dual tabulation in 1949, supplemented by additional research, to adjust the deaths tabulated during 1940–48 according to the Fifth Revision to provide estimates of the numbers that would have been assigned to the various rubrics of the Sixth Revision, and crude annual death rates in 1940–51 from various cardio-vascular causes classified in accordance with the Sixth Revision are shown in Table CXI (page 222). For actual numbers of deaths and fuller details of causes reference should be made to Tables 7 and 8 of Part I (1951).

In each sex, mortality from active rheumatic fever has declined rapidly since 1945. Improvement in respect of chronic rheumatic heart disease, of which well over half the cases involved the mitral valve, was much less for males and practically absent for females. The rates in Table CXI are for deaths at all ages ; there has been a much greater reduction in mortality at younger than at older ages. For example the percentage reduction at ages under and over 35 between 1941 and 1949 from Fifth Revision No. 92, chronic affections of the valves and endocardium (corresponding approximately to Nos. 410–416, 421 of the current classification) were :

	<i>Males</i>	<i>Females</i>
Under 35 ... ..	34	42
35 and over ... ..	24	14



Mortality from "arteriosclerotic heart disease" has recorded a large and continuing increase during the past few decades. Deaths assigned to this cause comprise those with mention of coronary disease or myocardial infarction (No. 420.1); angina pectoris (No. 420.2); or described simply as arteriosclerotic heart disease (No. 420.0). In 1951, 97.1 per cent of the deaths assigned to the group belonged to the first category, 2.3 per cent to the second and 0.6 per cent to the third. The steep rise in diseases of the coronary arteries as a certified cause of death in this and other Western countries has provoked much speculation as to its cause. That there has been a change in certification habits cannot be denied, and many deaths nowadays certified as due to coronary disease or its synonyms would formerly have been described by other terms. There is evidence too of a tendency at times to mention coronary disease as a terminal development during the course of other illnesses or to use the term occasionally as a more "precise" description of the cause of death of elderly persons dying apparently from nothing more definite than senile cardiac failure. But the possibility that some, or even much, of the recorded increase in mortality from this disease is nomenclatural does not exclude the possibility that this nomenclatural increase conceals, and perhaps has originated from, a real increase in the incidence of the disease, the true magnitude of which must remain uncertain. It is doubtful whether a study confined solely to the available vital statistics can throw much light on this point; it seems rather that we must try to determine the factors responsible for the occurrence of the disease at the present time—among which mental stress, diet, and lack of physical activity have come under suspicion—and judge whether the varying influence of the causative factor or factors can have produced a rising incidence of the disease. The problem is made more difficult by the present unsatisfactory and confused state of terminology; heart diseases described in terms such as coronary, myocardial, degenerative, ischaemic, arteriosclerotic, hypertensive, or senile, are frequently mentioned on death certificates, but it is evident that the same descriptions, though not used indiscriminately by the individual certifiers, are often intended to convey different meanings when used by different certifiers. The proportion of deaths ascribed to cardiovascular causes is becoming increasingly large and it is becoming more and more urgent to clarify the nomenclature of these diseases in order that the mortality trends can be properly analysed and those cardiac conditions responsible for premature and preventable deaths distinguished from those, if there are such, that are the inevitable concomitants of old age.

Mortality from chronic endocarditis not specified as rheumatic has undergone a considerable reduction in recent years. In 1951 about two thirds (1,486) of the deaths assigned to this group involved the aortic valve, the proportion being higher for men than for women. Of the remainder the majority did not incriminate any particular valve, only 36 deaths being assigned to the mitral and 5 each to the tricuspid and pulmonary valves respectively. In accordance with the Classification, deaths attributed to mitral valve disease not specifically described as non-rheumatic are assigned to the rheumatic group (No. 410).

The death rate from "other myocardial degeneration" (No. 422), still the largest constituent of the circulatory diseases section, has shown some recent tendency to decline amongst men but has remained steady amongst women. In each sex the deaths in 1951 were somewhat augmented by the influenza epidemic that occurred at the beginning of the year. It has been frequently observed that during influenza epidemics the mortality attributed on death certificates to a number of other diseases, especially the cardiovascular and respiratory diseases, is much increased (see page 206). This is illustrated in the following table which compares the number of deaths occurring in the month of January, 1950 and 1951.



	January 1950	January 1951	Increase
Influenza (480-483) ... ..	416	8,982	8,566
Arteriosclerotic Heart Disease (420) ... ..	5,291	6,738	1,447
Myocardial Degeneration (422) ... ..	7,879	13,470	5,591
Pneumonia (490-493) ... ..	2,250	5,698	3,448
Bronchitis (500-502) ... ..	3,845	10,823	6,978

Mortality from acute and subacute endocarditis (No. 430), consisting in this country chiefly of subacute bacterial endocarditis, has fallen rapidly since about 1945 when antibiotic therapy began. In each sex the death rate in 1951 was about one third of that prevailing ten years earlier.

Although deaths now assigned to hypertensive diseases (Nos. 440-447) include many that were previously classified to a variety of cardiovascular and renal conditions, the reconstructed rates shown for 1940 to 1948 are probably comparable with those for 1949 to 1951, and indicate that in each sex there has been a steady increase in the number of deaths assigned to the group throughout this period. On the other hand the death rate from general arteriosclerosis has remained level for males but has latterly increased amongst females ; and a similar trend is given by the mortality from cerebral vascular diseases (Nos. 330-334) which, though not classified as circulatory diseases, have been appended to Table CXI for comparison.

Mortality assigned to pulmonary embolism and infarction has more than doubled in each sex since 1945. The tabulation of deaths from these conditions is at present somewhat unsatisfactory since assignment is ordinarily made to the underlying disease (or reason for operation in post-operative cases), if this can be ascertained. The deaths actually assigned to pulmonary embolism are therefore only those where no further details were available about the origin of the condition.

Taking the section of diseases of the circulatory system as a whole, (Nos. 400-468), and discounting, so far as possible, fluctuations between one year and another, there has been a tendency for the crude rates for each sex to rise during the last five years or so from the low levels recorded during 1942-46, and this tendency is confirmed after allowance is made for age changes in the population. Three-year moving averages of the Comparative Mortality Indices for successive years are shown in the following table (1938 = 1.00) :—

	Male	Female
1940-42... ..	1.03	1.01
1941-43... ..	0.97	0.93
1942-44... ..	0.96	0.91
1943-45... ..	0.96	0.91
1944-46... ..	0.97	0.91
1945-47... ..	1.00	0.94
1946-48... ..	1.00	0.93
1947-49... ..	1.03	0.96
1948-50... ..	1.04	0.97
1949-51... ..	1.11	1.03

### Sex and Age Distribution

Table CXII (page 223) gives numbers of deaths in 1951 from several circulatory diseases by sex and age with rates per million population and per 100 deaths from all circulatory diseases.



At ages under 15 rheumatic fever was the principal cardiovascular cause of death in each sex, but by ages 15–24 chronic rheumatic heart disease predominated and was responsible for more than half of the deaths from cardiovascular causes. At every age the death rate from chronic rheumatic heart disease was higher amongst females than amongst males, a sequel to the higher incidence of rheumatic fever amongst girls than boys. At ages 25–44 the distribution of causes differed markedly in the two sexes, with arteriosclerotic (coronary) disease assuming a major role for men but with chronic rheumatic heart disease continuing as a principal cause of cardiovascular deaths amongst women. Though becoming proportionately less important thereafter in each sex, the death rates from rheumatic heart disease continued to increase with advancing age, in this respect resembling each of the other causes in Table CXII except rheumatic fever.

Amongst men arteriosclerotic (coronary) disease occupied the principal position in each age group from 25 to 75 years but thereafter non-rheumatic valvular and myocardial degenerative conditions became the most frequently certified causes. Amongst women the death rates assigned to these two large groups of causes were lower than for men ; at ages 45–64 more deaths were reported due to coronary than to valvular and myocardial diseases but at 65–74, and still more at ages 75 and over, as for men, the latter group predominated to the extent of many thousands of deaths.

At each adult age the death rates from hypertensive disease, with or without mention of heart, were much higher amongst men than women, a somewhat different sex relationship from that presented by cerebral cardiovascular disease, mortality from which showed practically no difference between the sexes at ages 25–64 and only a small male excess at higher ages.

### Geographical Distribution

Table CXIII (page 224) compares the death rates from certain cardiovascular causes of men and women aged 55–74 living in different degrees of urbanization in different parts of England and Wales.

Chronic valvular disease, rheumatic or other, gave consistent rates in most areas, with a tendency towards higher mortality in Wales than elsewhere and a pronounced difference between the rates for women in the South East Lancashire conurbation (Manchester area) and the Merseyside conurbation (Liverpool area).

Mortality from arteriosclerotic (coronary) disease was less in the aggregated rural districts than in towns. Rates were higher in the North of England than in the Midlands and South of England, particularly in the Tyneside conurbation (Newcastle area) and the West Yorkshire conurbation (Leeds and Bradford area).

The conurbations and the rural areas gave the lowest rates from myocardial degeneration, the low figure for the conurbations resulting from the low rate for the Greater London conurbation which comprises about half of the aggregated conurbations' population. Several of the other conurbations gave rates considerably above the average for the country as a whole.

Death rates from hypertension were much higher in the conurbations and other large urban areas than in rural districts ; regions with lowest rates were the Eastern and Southern.

High mortality from cerebral vascular disease was recorded in the northern conurbations, the rate in these areas contrasting with the low rate for Greater London, a rate that was even lower than in the aggregated rural districts.



Table CX.—Diseases of the circulatory system : Deaths in 1949 classified according to the 5th and 6th Revisions of the International Statistical Classification

5th Revision				6th Revision			
No.	Title	Number of deaths		No.	Title	Number of deaths	
		Male	Female			Male	Female
90-103	Diseases of the circulatory system	86,906	89,611	400-468	Diseases of the circulatory system	89,013	91,608
90	Pericarditis .. .. .	194	128	400-402	Rheumatic fever .. .. .	312	391
91	Acute endocarditis .. .. .	243	210	410-416	Chronic rheumatic heart disease .. .. .	3,733	6,075
92	Chronic affections of the valves and endocardium .. .. .	5,850	7,946	420	Arteriosclerotic heart disease, including coronary disease .. .. .		
93	Diseases of the myocardium .. .. .	40,547	51,836	421	Chronic endocarditis not specified as rheumatic..	29,902	17,226
94	Diseases of the coronary arteries, angina pectoris .. .. .	27,555	15,367	422	Other myocardial degeneration .. .. .	2,313	2,142
95	Other diseases of the heart .. .. .	1,874	2,509	430	Acute and subacute endocarditis .. .. .	35,554	46,646
96	Aneurysm (except of heart and aorta) .. .. .	180	215	431 ; 432	Acute myocarditis and pericarditis not specified as rheumatic .. .. .	255	215
97	Arteriosclerosis (excluding coronary or renal sclerosis or cerebral hæmorrhage) .. .. .	6,573	7,090		Functional disease of heart .. .. .	115	153
98	Gangrene .. .. .	206	203	433	Other and unspecified diseases of heart .. .. .	1,130	1,733
99	Other diseases of the arteries .. .. .	234	204	434	Hypertension with heart disease .. .. .	943	873
100	Diseases of the veins .. .. .	398	690	440-443	Hypertension without mention of heart disease..	4,166	4,660
101	Diseases of the lymphatic system.. .. .	18	16	444-447	General arteriosclerosis .. .. .	3,845	4,086
102	High blood pressure (idiopathic) .. .. .	3,022	3,179	450	Aneurysm (non-syphilitic) .. .. .	5,325	5,617
103	Other diseases of the circulatory system.. .. .	12	18	451 ; 452	Other diseases of arteries .. .. .	355	403
				453-456	Varicose veins, hæmorrhoids, phlebitis .. .. .	360	340
				460-464	Pulmonary embolism and infarction .. .. .	253	492
				465	Other diseases of circulatory system .. .. .	284	312
				466-468		168	244

Table CXI.—Diseases of the circulatory system and vascular lesions affecting the central nervous system : Death rates per million living, by sex, 1940 to 1951

Abbreviated List No.	Detailed List No.		1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
B 24	400-402	Rheumatic fever .. ..	28	26	23	25	28	25	19	18	18	15	12	8
B 25	410-416	Chronic rheumatic heart disease .. ..	34	26	24	29	26	24	19	19	20	17	14	9
B 26	420	Arteriosclerotic heart disease, including coronary disease .. ..	254	259	252	241	260	246	208	203	181	181	201	194
			336	307	290	294	290	286	272	272	257	270	306	298
			808	805	850	954	1,065	1,137	1,129	1,245	1,264	1,453	1,640	1,756
			374	348	365	396	425	466	522	586	652	765	885	938
	421	Chronic endocarditis not specified as rheumatic .. ..	228	213	203	202	200	182	150	132	106	112	72	62
			191	165	156	150	148	138	123	114	97	95	54	45
	422	Other myocardial degeneration .. ..	2,039	1,931	1,864	1,950	2,020	2,004	1,821	1,890	1,559	1,728	1,555	1,648
			2,076	1,817	1,715	1,802	1,798	1,881	1,921	2,026	1,772	2,071	1,965	2,084
B 27	430	Acute and subacute endocarditis .. ..	27	27	27	28	25	21	16	16	14	12	11	10
			21	22	24	23	20	15	13	11	10	10	7	7
	431-434	Other diseases of heart .. ..	161	143	133	127	123	119	104	103	86	107	111	149
B 28, 29	440-447	Hypertension with or without mention of heart disease .. ..	167	143	124	119	115	119	117	120	109	122	128	158
			316	314	316	338	354	358	348	375	351	389	445	476
			256	237	237	253	260	269	293	331	324	388	452	480
B 46 Pt.	450	General arteriosclerosis .. ..	275	263	263	272	285	279	264	279	239	259	269	287
			208	190	189	196	194	207	224	235	214	249	260	280
	465	Pulmonary embolism and infarction .. ..	6	7	6	7	10	7	9	11	11	14	15	16
			7	7	6	6	6	7	9	10	10	14	15	14
	Rem. of 451-468	Other circulatory diseases .. ..	62	57	54	53	59	60	53	49	50	54	47	45
			64	57	53	56	55	54	56	58	58	65	59	53
	400-468	Diseases of the circulatory system .. ..	4,204	4,046	3,991	4,195	4,429	4,437	4,121	4,320	3,879	4,325	4,378	4,651
			3,735	3,319	3,183	3,322	3,337	3,465	3,570	3,780	3,522	4,068	4,143	4,366
			1-13	1-01	0-95	0-95	0-97	0-96	0-98	1-06	0-97	1-07	1-09	1-16
		Comparative Mortality Index .. ..	1-13	0-98	0-91	0-91	0-90	0-96	0-93	0-97	0-89	1-01	1-01	1-06
B 22	330-334	Vascular lesions affecting the central nervous system .. ..	1,268	1,228	1,258	1,290	1,365	1,381	1,249	1,284	1,125	1,228	1,284	1,378
			1,326	1,262	1,281	1,307	1,344	1,374	1,440	1,524	1,413	1,544	1,656	1,734



Table CXII.—Diseases of the circulatory system and vascular lesions affecting the central nervous system : Deaths and death rates per million living, and per 100 deaths from all circulatory diseases, by sex and age, 1951

Abbreviated List No.	Cause of death	0—	15—	25—	45—	65—	75 and over	All ages
Males								
B 24	Rheumatic fever .. .. {Deaths Rates Per cent	36 7·2 33·3	29 10·6 14·1	42 6·5 1·7	44 8·9 0·2	11 8·1 0·0	2 3·3 0·0	164 7·8 0·2
B 25	Chronic rheumatic heart disease .. .. {Deaths Rates Per cent	29 5·8 26·9	106 38·9 51·7	724 112 28·8	1,518 307 6·8	983 720 3·2	716 1,189 1·7	4,076 194 4·2
B 26 {	Arteriosclerotic heart disease {Deaths Rates Per cent	4 0·80 3·7	10 3·7 4·9	1,052 163 42·0	13,139 2,660 59·0	13,391 9,803 43·6	9,369 15,563 22·3	36,965 1,756 37·7
	Degenerative heart disease.. {Deaths Rates Per cent	6 1·21 5·6	14 5·1 6·8	205 31·8 8·2	3,423 693 15·4	9,653 7,067 31·4	22,684 37,681 53·9	35,985 1,710 36·8
B 27	Other diseases of heart .. {Deaths Rates Per cent	21 4·2 19·4	27 9·9 13·2	174 27·0 6·9	815 165 3·7	1,074 786 3·5	1,235 2,051 2·9	3,346 159 3·4
B 28	Hypertension with heart disease .. .. {Deaths Rates Per cent	2 0·40 1·9	2 0·73 1·0	106 16·4 4·2	1,862 377 8·4	2,999 2,195 9·8	3,048 5,063 7·2	8,019 381 8·2
B 29	Hypertension without heart disease .. .. {Deaths Rates Per cent	1 0·20 0·9	12 4·4 5·9	99 15·4 3·9	517 105 2·3	583 427 1·9	793 1,317 1·9	2,005 95 2·0
B 46 (Pt.)	Other circulatory diseases .. {Deaths Rates Per cent	9 1·8 8·3	5 1·8 2·4	108 16·8 4·3	946 192 4·2	2,027 1,484 6·6	4,236 7,037 10·1	7,331 348 7·5
	All circulatory diseases.. {Deaths Rates Per cent	108 21·7 100	205 75·3 100	2,510 390 100	22,264 4,508 100	30,721 22,490 100	42,083 69,905 100	97,891 4,651 100
B 22	Vascular lesions affecting central nervous system {Deaths Rates	29 8·8	37 13·6	455 70·6	5,596 1,133	9,964 7,294	12,922 21,465	29,003 1,378
Females								
B 24	Rheumatic fever .. .. {Deaths Rates Per cent	55 11·5 45·7	40 13·9 16·5	43 6·5 2·3	60 10·6 0·5	12 6·4 0·1	4 4·2 0·0	214 9·4 0·2
B 25	Chronic rheumatic heart disease .. .. {Deaths Rates Per cent	32 6·7 26·5	137 47·7 56·7	1,079 163 57·3	2,493 440 19·5	1,667 885 6·2	1,369 1,425 2·4	6,777 298 6·8
B 26 {	Arteriosclerotic heart diseases {Deaths Rates Per cent	— — —	5 1·7 2·0	178 26·9 9·4	3,984 703 31·1	8,341 4,427 31·1	8,836 9,195 15·5	21,344 938 21·5
	Degenerative heart disease.. {Deaths Rates Per cent	5 1·0 3·9	10 3·5 4·2	180 27·3 9·5	2,834 500 22·1	10,269 5,451 38·3	35,136 36,562 61·1	48,434 2,129 48·8
B 27	Other diseases of heart .. {Deaths Rates Per cent	17 3·6 14·0	26 9·1 10·8	128 19·4 6·8	722 127 5·6	1,134 602 4·2	1,722 1,792 3·0	3,749 165 3·8
B 28	Hypertension with heart disease .. .. {Deaths Rates Per cent	1 0·21 0·8	3 1·0 1·2	94 14·2 5·0	1,559 275 12·2	3,025 1,606 11·3	4,239 4,411 7·4	8,921 392 9·0
B 29	Hypertension without heart disease .. .. {Deaths Rates Per cent	2 0·42 1·7	7 2·4 2·8	76 11·5 4·0	398 70·2 3·1	583 309 2·2	934 972 1·5	2,000 87·9 2·0
B 46 (Pt.)	Other circulatory diseases .. {Deaths Rates Per cent	9 1·9 7·4	14 4·9 5·8	108 16·4 5·7	760 134 5·9	1,762 935 6·6	5,250 5,463 9·1	7,903 347 7·9
	All circulatory diseases.. {Deaths Rates Per cent	121 25·4 100	242 84·3 100	1,886 286 100	12,810 2,260 100	26,793 14,221 100	57,490 59,823 100	99,342 4,366 100
B 22	Vascular lesions affecting central nervous system {Deaths Rates	29 6·1	24 8·4	472 71·5	6,740 1,189	12,156 6,452	20,022 20,835	39,443 1,734

Table CXIII.—Death rates per million living by sex at age 55–74 from selected diseases of the circulatory system and from vascular lesions affecting the central nervous system in standard regions, conurbations and population density aggregates, 1951

	Chronic rheumatic heart disease and other chronic endocarditis (410–416, 421)		Arteriosclerotic heart disease (420)		Myocardial degeneration (422)		Hypertension with or without heart disease (440–447)		Vascular lesions of central nervous system (330–334)	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
England and Wales	749	798	6,559	2,599	3,419	2,724	1,561	1,139	4,145	3,863
Density Aggregates Summary :										
Conurbations ..	761	824	6,889	2,623	3,199	2,513	1,847	1,296	4,042	3,721
Areas outside conurbations ..	741	782	6,365	2,583	3,549	2,857	1,393	1,041	4,206	3,952
Urban areas with populations over 100,000 ..	752	813	6,787	2,677	3,799	2,812	1,626	1,256	4,387	3,997
Urban areas with populations over 50,000 and under 100,000 ..	750	844	7,096	2,659	3,719	2,855	1,454	940	4,412	3,926
Urban areas with populations under 50,000 ..	732	759	6,695	2,645	3,728	3,005	1,440	1,074	4,531	4,088
Rural areas ..	741	760	5,446	2,407	3,123	2,711	1,165	889	3,651	3,767
Regional Summary* :										
Northern ..	709	846	7,500	3,452	3,484	3,096	1,693	1,229	5,000	4,582
East and West Ridings ..	707	872	7,401	3,070	4,059	3,217	1,426	1,256	4,796	4,519
North Western ..	777	857	7,398	2,806	4,457	3,672	1,714	1,210	4,905	4,598
North Midland ..	739	751	5,625	2,545	3,159	2,029	1,379	1,137	4,223	3,863
Midland ..	696	746	5,687	2,384	3,791	3,041	1,687	1,326	4,377	3,814
Eastern ..	655	716	6,185	2,388	2,924	2,186	1,185	918	3,498	3,356
London and South Eastern ..	755	766	6,398	2,412	2,544	1,888	1,724	1,108	3,374	3,133
Southern ..	705	669	6,029	2,367	3,133	2,342	1,352	924	3,695	3,439
South Western ..	804	794	5,951	2,224	3,429	2,862	1,392	1,018	3,992	3,896
Wales ..	944	1,004	6,968	2,528	3,981	3,280	1,500	1,172	4,347	4,436
Conurbations:										
Tyneside ..	677	886	7,862	3,506	3,215	2,734	2,108	1,519	5,477	4,468
West Yorkshire ..	766	916	8,533	3,274	4,358	3,263	1,642	1,405	5,394	4,874
South East Lancashire ..	795	1,000	7,042	2,639	4,453	3,734	1,884	1,335	4,811	4,726
Merseyside ..	745	530	7,638	2,773	4,223	3,212	2,074	1,295	4,617	4,030
West Midlands ..	627	766	5,725	2,228	3,797	2,919	1,869	1,396	4,373	3,858
Greater London ..	794	805	6,555	2,457	2,265	1,739	1,813	1,214	3,198	2,999

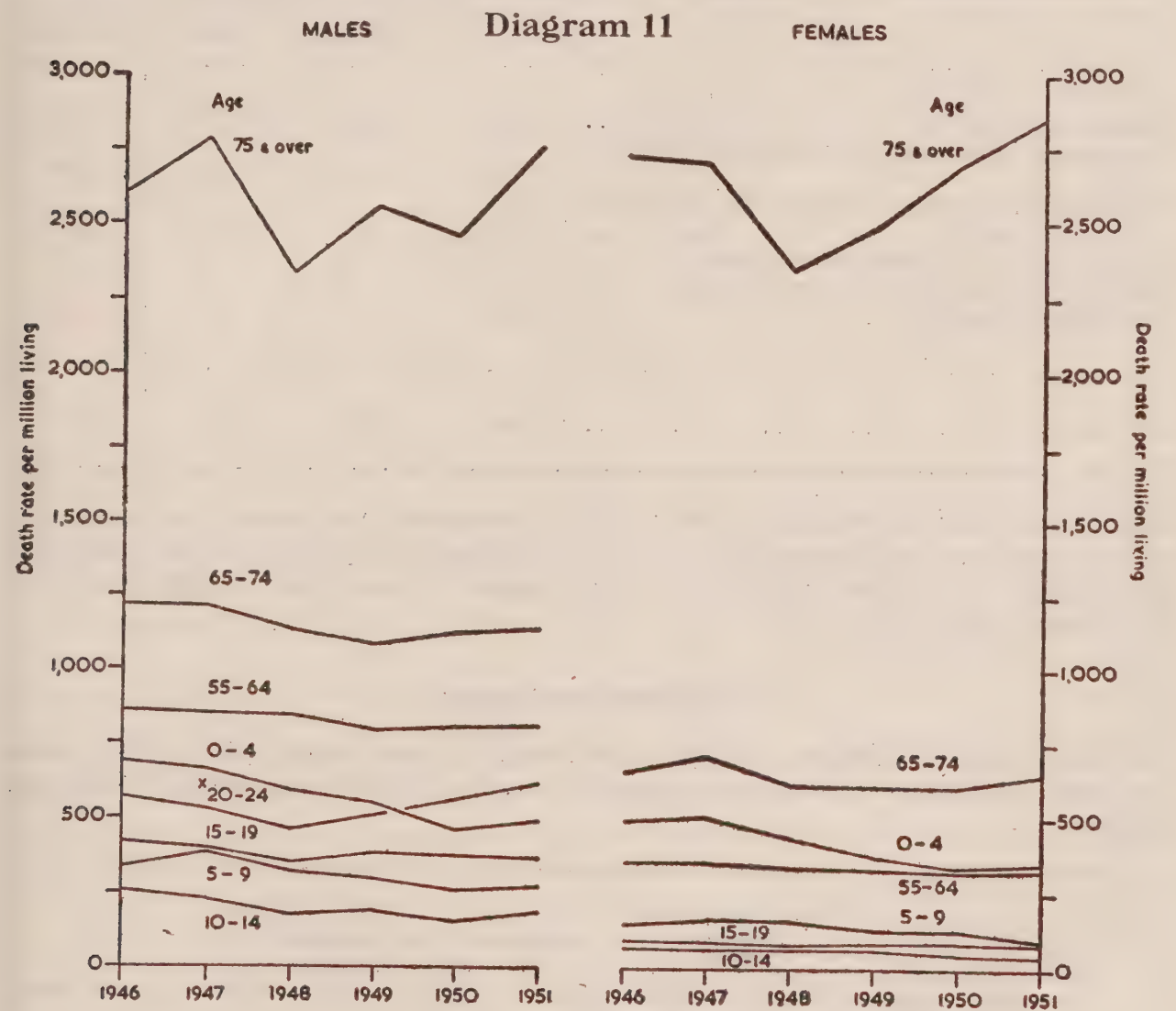
\* Including conurbations.



# ACCIDENTAL AND VIOLENT DEATHS

In 1951, 12,447 males and 7,309 females met with accidental and violent deaths, compared with 11,905 males and 6,984 females in 1950 and an average over the five preceding years of 11,899 and 7,290 respectively. In 1951 as in 1950, motor vehicle and other road vehicle accidents, suicides and accidental falls accounted for the greater part of the deaths ; 24 per cent, 23 per cent and 23 per cent respectively. Accidental drowning caused a further 5 per cent and burns by fires and hot substances and liquids an additional 4 per cent of the deaths in 1951. The crude death rates from accidental and violent causes per million living were as follows in the post-war years :—

	1946	1947	1948	1949	1950	1951
Males .. ..	624	632	558	569	562	591
Females .. ..	325	333	306	302	308	321
Sex-ratio M/F .. ..	1.9	1.9	1.8	1.9	1.8	1.8



x Female rates are so similar at 20-24 to rates at 15-19 they cannot be represented separately

Death rates per million living from accidental and violent causes for certain age groups, 1946 to 1951.

For both sexes the rates in 1951 were higher than during 1948 to 1950, though they did not reach the 1947 level. The sex-ratio of male to female rates remained at 1·8 or 1·9 during the period.

Table CXIV (page 238) shows the proportion of deaths attributed to accidents and violence in different age groups. The proportion of accidental and violent deaths of both sexes at all ages and at ages 35 and over was slightly lower in 1951 than in 1950. At ages under 35 the proportions had increased and in the case of men aged 15–34, 35 per cent of deaths in 1951 were due to accidental and violent causes.

Table CXV (page 238) shows the death rates from accidental and violent causes per million living. In 1951 male rates showed an increase over those for 1950 in each age group except 15–19, and female rates an increase except at ages 5–14 and 35–44. Rates at ages 75 and over were roughly two and a half times those at ages 65–74 for men and four and a half times for women. There continued to be a peak in the male rate at ages 20–24, the rate of 619 in 1951 being the highest since 1941–45. The rate at ages 0–4 was higher for both sexes than at ages 5–19. Diagram 11 shows trends from 1946 to 1951 for certain age groups.

The chief causes of death in children aged under five were :—

	Numbers		Percentage	
	Male	Female	Male	Female
Transport accidents .. .. .	210	120	23	19
Suffocation by ingestion or inhalation of food, etc. .. .. .	182	130	20	20
Accidental mechanical suffocation in bed or cradle .. .. .	163	125	18	20
Lack of care of infants under 1 year ..	63	41	7	6
Burns by fire, hot substances or liquids ..	68	84	7	13
Accidental drowning .. .. .	105	52	11	8
All causes .. .. .	931	636	100	100

Suffocation and drowning between them accounted for more than twice as many deaths of children under 5 as did transport accidents, but deaths from suffocation were more frequent at ages under 1, and those from transport accidents at ages 1–4.

### Railway accidents

Deaths in 1951 due to railway accidents, 301 males and 33 females, were less than in 1950. The average numbers in the three years 1949–51 were as follows :—

	Involving railway employee	Involving passenger	Involving other or unspecified person	Total
Males .. ..	184	38	99	321
Females .. ..	2	13	18	33



## Motor and other Road Vehicle accidents

In 1951, 3,293 males and 1,099 females died from motor vehicle traffic accidents, an increase of 6 per cent in each case on the deaths in 1950. Accidents involving other road vehicles caused the deaths of 238 males and 68 females, decreases of 19 and 28 per cent respectively on the 1950 deaths. The distribution of road vehicle accidents in age groups in 1951 is shown in Table CXVI (page 239).

There were 304 deaths of children under 5 due to motor vehicle accidents on public highways, an increase of 16 per cent over 1950. Forty-six per cent of the men of working age who died were motor cycle riders or passengers. Of 1,092 fatal vehicle accidents to people of 65 and over, 868 or 79 per cent were deaths of pedestrians.

Table CXVII (page 239) shows death rates per million living due to motor vehicle accidents, by sex and age. The Comparative Mortality Indices rose from 0·72 in 1950 to 0·77 in 1951 for males and from 0·67 to 0·71 for females. The only age groups in which there was a lower rate in 1951 than in 1950 were men aged 65–74 and girls under 15.

Table CXVIII (page 240) shows the death rates in different areas, based on area of residence, from motor vehicle accidents. Deaths of both boys and girls under 15 were lowest in Greater London; the boys' death rate was about twice that of the girls'. The highest rate for boys occurred in rural areas and for girls in urban areas with populations of 100,000 or over. From ages 15–64, both male and female rates were highest in rural areas, and men's rates at ages 15–44 were about eight times those for women. Rates for both men and women aged 65 and over were higher in Greater London and the other conurbations than in the remaining density aggregates. The rates in these areas expressed as percentages of the England and Wales rates were as follows :—

	Males					Females				
	0–	15–	45–	65 and over	All ages	0–	15–	45–	65 and over	All ages
<b>England and Wales</b> .. .. .	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
Conurbations (excluding Greater London) ..	114	81	104	106	94	104	93	98	116	102
Areas outside conurbations .. .. .	106	113	103	95	107	106	100	102	84	98
Urban areas with populations of 100,000 and over	96	87	85	105	91	115	93	95	108	102
Urban areas with populations of 50,000 and under 100,000 .. .. .	108	79	80	96	87	104	78	105	92	96
Urban areas with populations under 50,000 ..	95	101	92	91	96	100	96	81	85	92
Rural areas .. .. .	124	154	137	93	137	108	122	128	63	100

There was considerable variation between the regional rates in each age group.

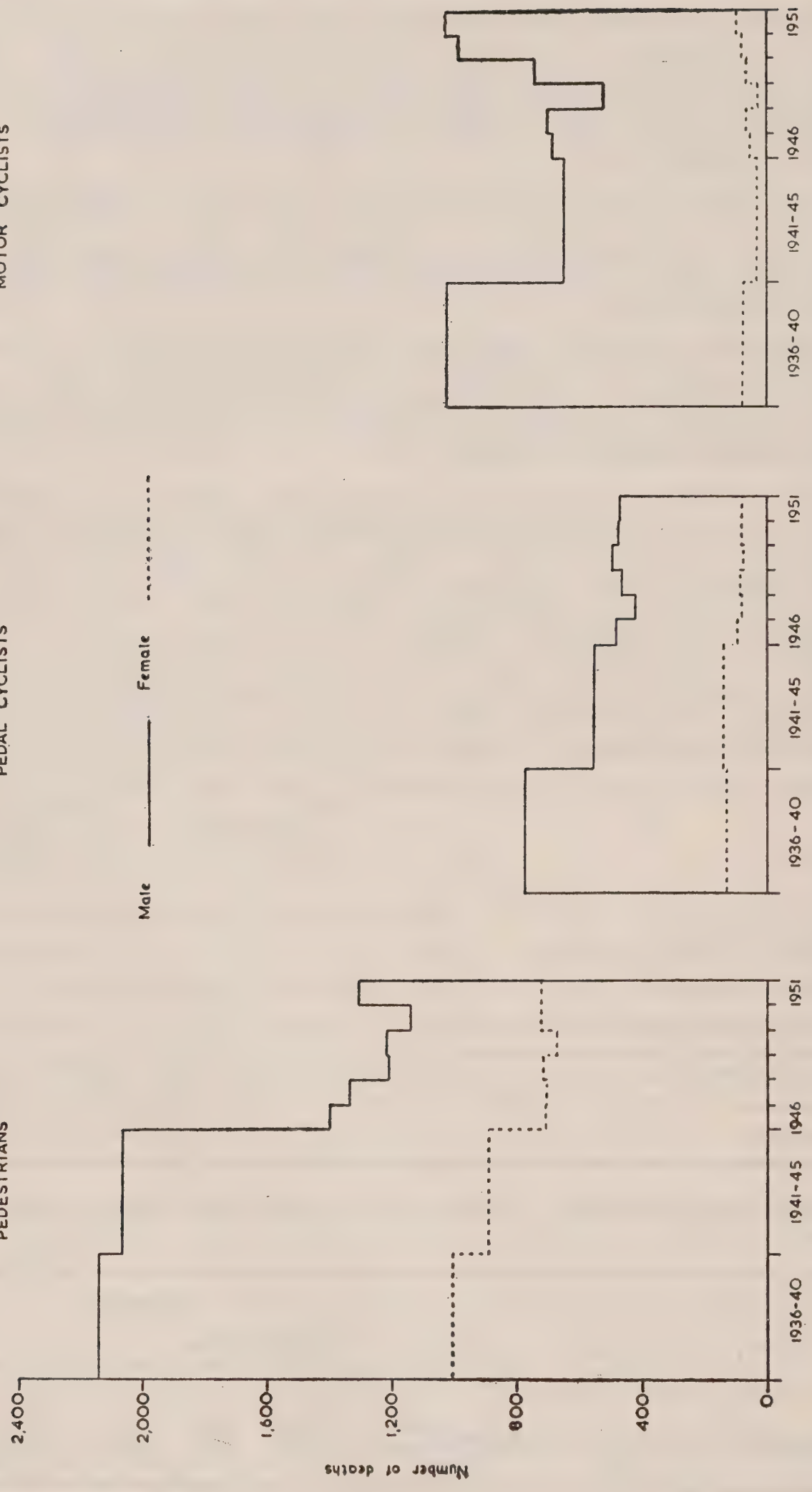
	Age groups			
	0–	15–	45–	65 and over
Coefficient of variation between regions { Male	30·6	18·6	13·4	17·7
Female	27·7	24·4	17·5	26·8

Diagram 12

PEDESTRIANS

PEDAL CYCLISTS

MOTOR CYCLISTS



Deaths in motor vehicle accidents, 1936 to 1951.



For both males and females the coefficient of variation was highest at ages 0–14 and lowest at 45–64, and except at ages under 15 the female rates showed greater variation than the male.

Deaths from road accidents are shown in Table CXIX (page 241) according to the type of vehicle involved. Deaths of male pedestrians due to accidents involving motor vehicles, which had decreased during 1948 to 1950, returned to the 1947 level (Diagram 12) ; female deaths also showed a slight increase on the number in 1950. Deaths of motor cyclists in motor vehicle accidents continued to increase, the number of male deaths in 1951 being nearly double that in 1948, the year of lowest mortality in recent times. Little variation was shown in deaths of pedal cyclists in road vehicle accidents.

### **Nature of injury**

Table CXX (page 242) shows the proportion per 1,000 violent deaths classified according to the nature of the injury involved. Fractured skulls continued to be the commonest type of fatal injury in motor vehicle accidents, accounting for 61 per cent of male and 56 per cent of female deaths. In other transport accidents fractured skulls caused 37 per cent of male and 41 per cent of female deaths compared with 40 per cent and 53 per cent respectively in 1950 ; internal injuries caused 10 per cent of male and 12 per cent of female deaths. Skull fractures also caused 34 per cent of male deaths due to falls, compared with only 9 per cent for females, but the proportion due to fractured limbs was 73 per cent among women compared with 38 per cent among men. Internal injuries accounted for 4 per cent of male deaths due to falls and 1 per cent of female deaths. Poisoning was the responsible agent in nearly half the male suicides and more than 70 per cent of the female.

### **Aircraft accidents**

Deaths in aircraft accidents numbered 296 in 1951, compared with 240 in 1950 and 210 in 1949. The average annual deaths in 1949–51 are shown in Table CXXI (page 243). Thirty-five per cent of the deaths occurred to occupants of commercial transport aircraft, and a further 57 per cent to occupants of aircraft of other types, including military aircraft. Accidents to non-occupants, whether on or away from airfields, formed 4 per cent of the total.

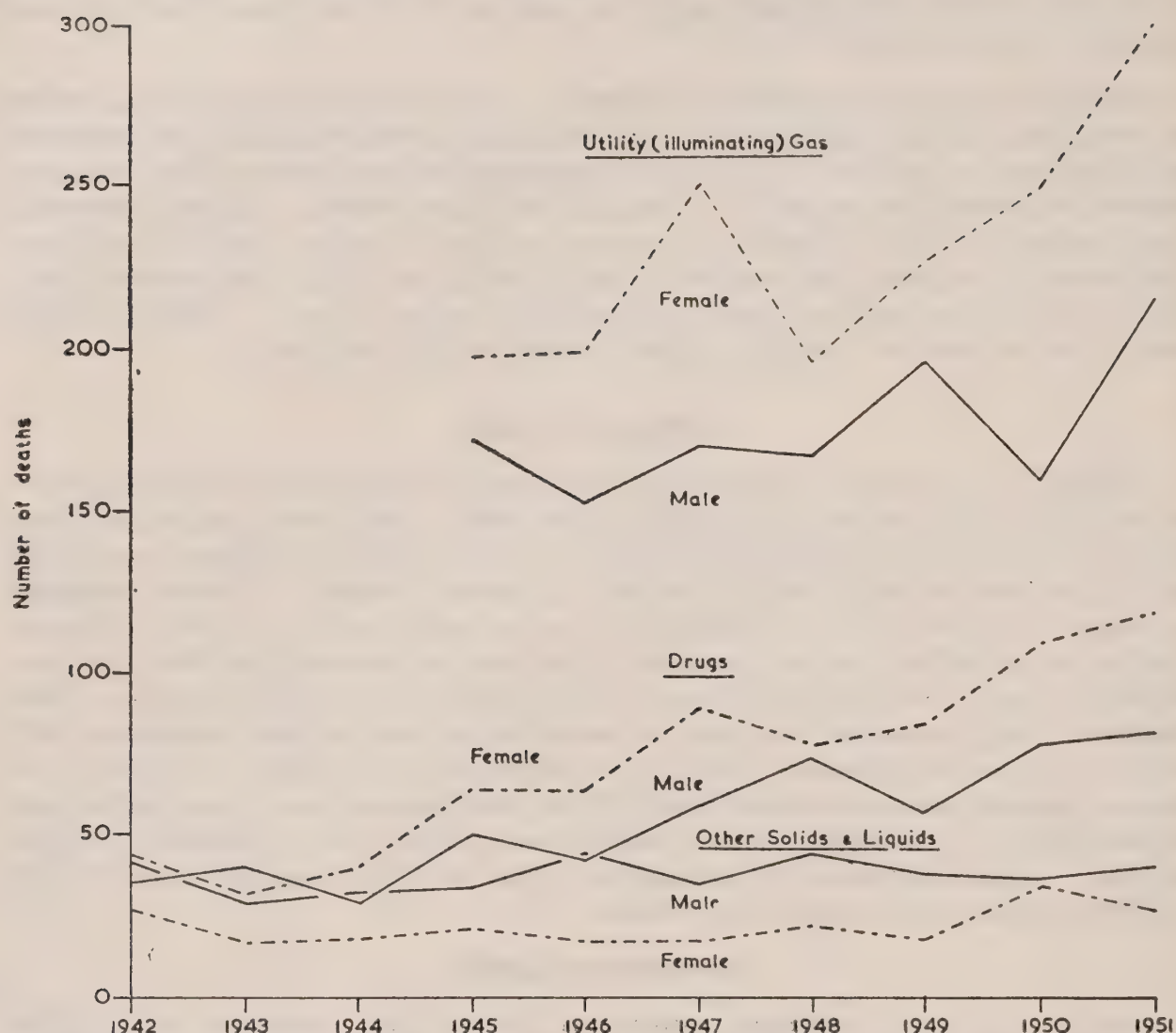
### **Accidental poisoning**

In 1951 820 people died from accidental poisoning ; 121 males and 143 females from poisoning by solid or liquid substances, and 252 males and 304 females from poisoning by gas and other vapours. In each of these four groups deaths were more numerous than in any of the ten preceding years. The ratio of female to male deaths was roughly the same for each type of poisoning, 1·18 in the case of solids and liquids and 1·21 in the case of gases and vapours. Table CXXII (page 243) shows the numbers of deaths during the decade 1942 to 1951 according to the poisoning agent involved.

Deaths from poisoning by barbiturates in 1950–51 were 55 per cent of male and 70 per cent of female deaths due to drug poisoning, compared with 32 per cent and 49 per cent in 1942–43. Accidental deaths due to corrosives, caustic alkalis, etc., a group which includes many household cleansing materials, showed no general upward trend (see Diagram 13). Separate figures are available from 1945 onwards for deaths due to domestic gas, the 515 deaths from this cause in 1951 being a maximum in the seven years.

Table CXXIII (page 244) shows that during the three years 1949 to 1951, accidental drug poisoning occurred more commonly in the home than elsewhere,

Diagram 13



Deaths from accidental poisoning, 1942 to 1951. (Utility gas poisoning from 1945 to 1951).

as also did utility gas poisoning. There was only one death in the three years in an industrial place from poisoning by a corrosive and only 26 deaths from utility gas poisoning ; 15 deaths from gas poisoning occurred in mines and quarries.

In studying individual poisoning agents, various methods of grouping may be followed. Thus Craig and Fraser\*, comparing cases of accidental poisoning of children under 12 treated in two hospitals in Edinburgh and Aberdeen during 1931-51 with similar deaths of children under 10 in England and Wales (1931-49) and Scotland (1939-51), have distinguished household poisons, the atropine group, medicines intended for either oral use or for external use and vegetable matter each excluding atropine. From the point of view of prevention, it seems convenient also to make a division according to the way the accident happened—thus tablets and pills may be eaten because they closely resemble some form of sweets, poisonous fungi and berries in mistake for innocuous ones, and household cleansers may be drunk in mistake for soft drinks. In England and Wales during the two periods 1931-39 and 1940-49 the deaths occurring in children under 15 years of age in the three groups—those due to berries or fungi, those due to pills or tablets and those due to drinking poisonous liquids—are shown in Table CXXIV (page 245).

In the nine years 1931-39, 74 boys and 56 girls under 15 years of age died of accidental poisoning and in the following ten years up to 1949 another 161 boys

\* Archives of Disease in Childhood, Vol. 28, No. 140, August 1953.



and 116 girls, the average annual number dying in the latter period being roughly double that in the former. Deaths from aspirin poisoning in the two periods were 3 and 13 respectively, from ferrous sulphate and fersolate 2 and 17, from oil of wintergreen (or methyl salicylate) 7 and 24. In each period, 79 per cent of all the deaths occurred among children aged one but under five, that is toddlers of the pre-school age. If, while such children are at home, all poisons and potentially dangerous medicaments were kept in an inaccessible place, the loss of these young lives would be prevented.

Deaths from accidental poisoning by gases and vapours have increased among old people, and the increase has been more marked among women. These trends cannot be attributed to an increasing number of elderly people in the population, for the death rates per million in 1941 and 1951 show the following comparison :—

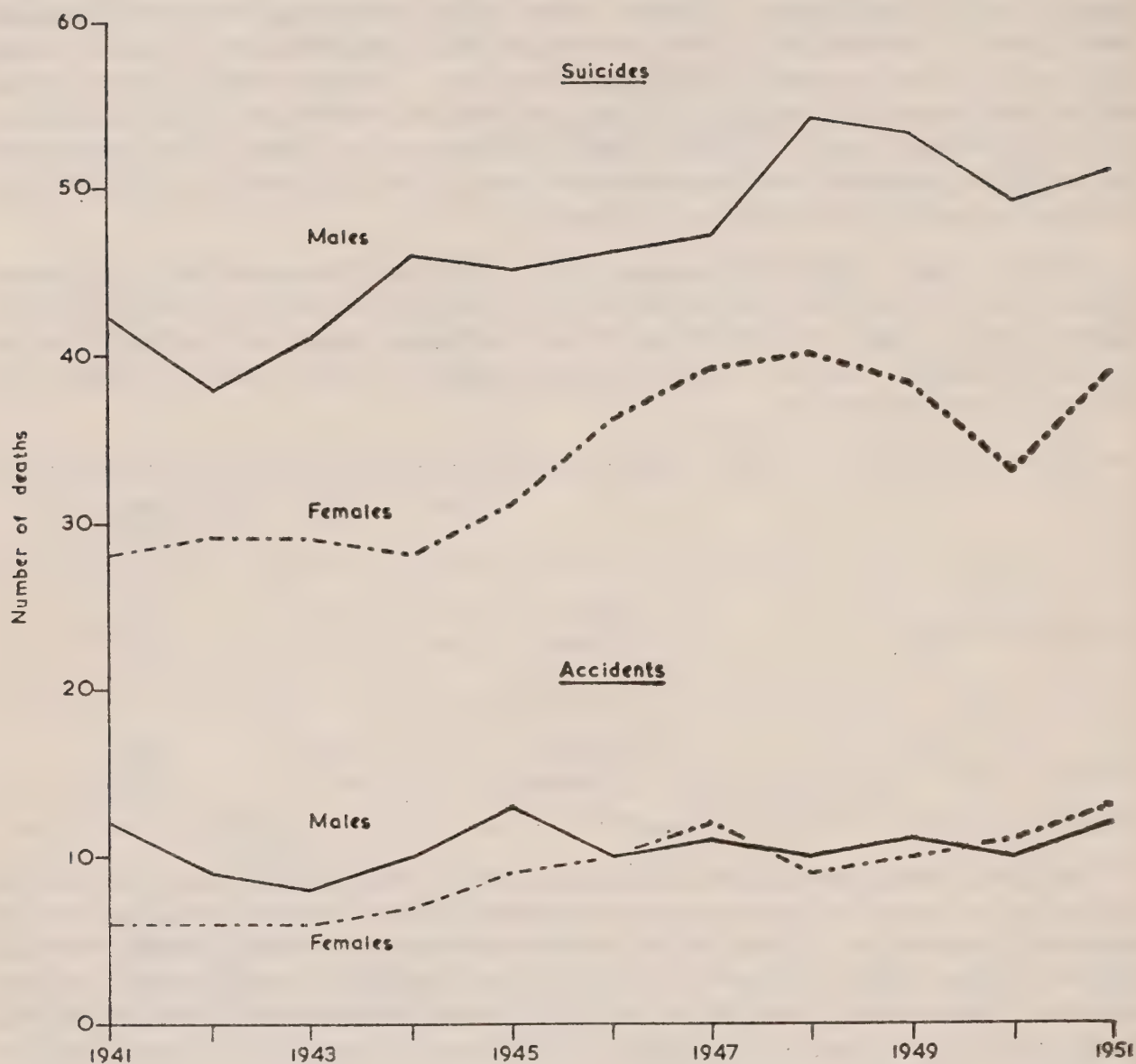
	1941	1951	1951 rate per cent of 1941 rate
At ages 65 and over .. .. . { Males Females	36 29	50 73	139 252
At ages 75 and over .. .. . { Males Females	57 67	106 150	186 224

The death rates per million at all ages during 1941 to 1951 from accidental poisoning by gases or vapours are compared with the corresponding suicide rates in Diagram 14. Up to 1945 the male rates for accidental deaths were in excess of the female ; since then they have tended to approximate to one another. Male suicide rates have been in excess of female over the whole period, the trends in the rates being similar. If rates for people of 65 and over be considered, we have the following comparison for suicide rates per million population:—

	1941	1951	1951 rate per cent of 1941 rate
At ages 65 and over .. .. . { Males Females	120 43	167 82	139 191
At ages 75 and over .. .. . { Males Females	139 33	193 69	139 209

Comparing the increases in the suicide rates with those in the rates for accidental deaths as shown above, the ratio of 1951 to 1941 rates for all males aged 65 and over is 139 per cent in each case, the same increase being apparent in the suicide rates for the age group 75 and over ; the increase in the rate for accidental deaths in the latter group is 186 per cent. Among females aged 65 and over, the accidental death rate increased by 252 per cent compared with 191 per cent increase for suicides, while in the restricted age group of 75 and over, female suicide rates increased by 209 per cent compared with 224 per cent for accidental deaths.

Diagram 14



Suicides and accidental deaths per million living due to gas and vapour poisoning, 1941 to 1951.

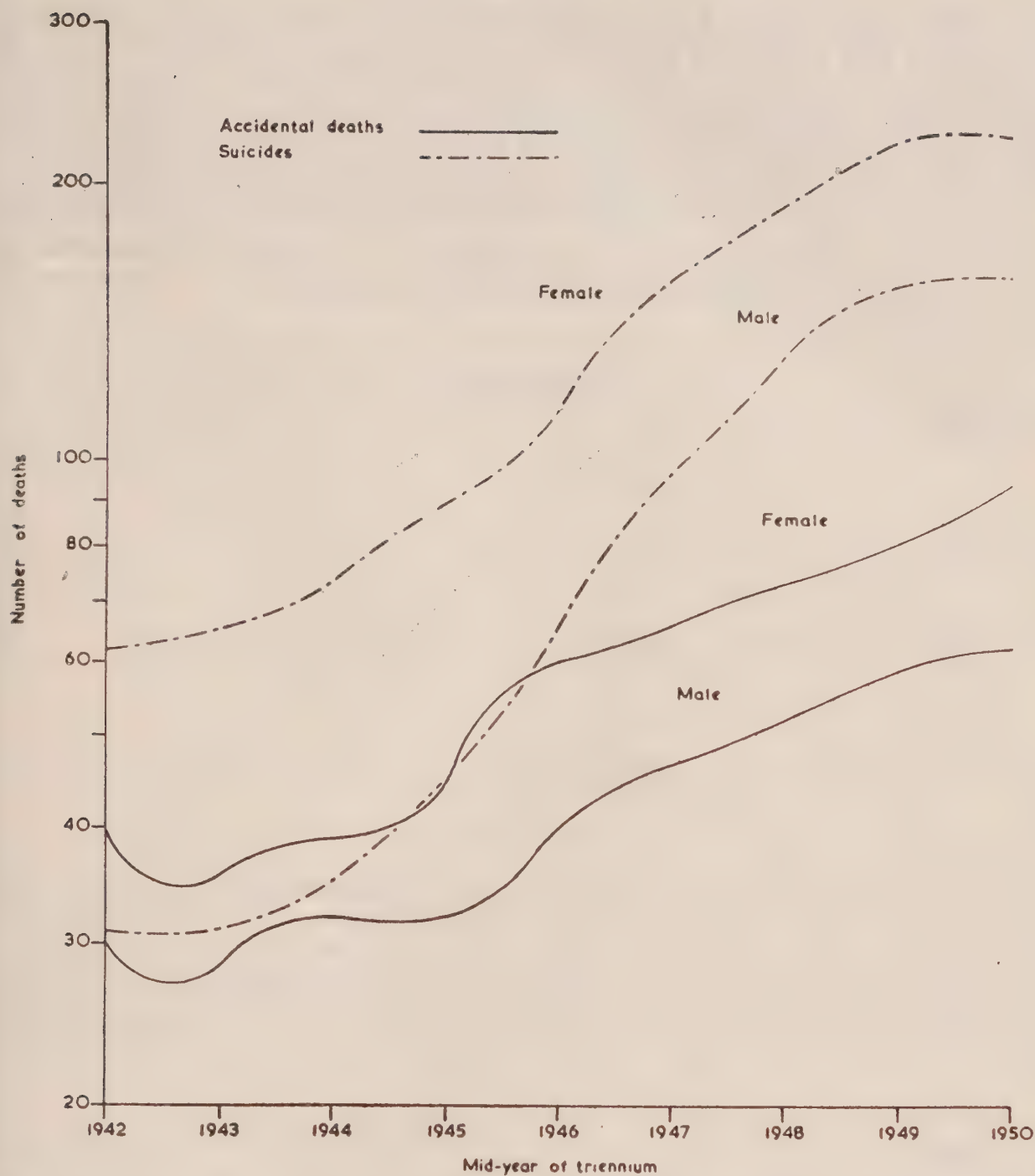
The numbers of accidental deaths and suicides from poisoning by analgesic and soporific drugs during 1941 to 1951 were as follows :—

		1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Accidental Deaths	{ M.	32	27	31	25	39	31	50	60	47	69	69
	{ F.	31	37	24	33	48	55	76	67	76	101	106
Suicides	{ M.	46	36	39	29	49	53	97	142	148	176	152
	{ F.	61	58	67	69	82	116	142	217	207	245	221

There was an upward trend in the number of both accidental deaths and suicides from about 1947 onwards with a further jump in 1950 and 1951. Diagram 15 shows the variations in the three-yearly moving averages of numbers of deaths from poisoning by analgesic and soporific drugs, both accidental and suicidal. While the accidental deaths have increased, the upward trend in the number of suicides, which is very similar for both males and females, has



Diagram 15



Three-yearly moving average of deaths from poisoning by analgesic and soporific drugs, 1941 to 1951.

been far greater. Moreover the percentage of suicides using analgesic and soporific drugs to total suicides has increased considerably, as shown below.

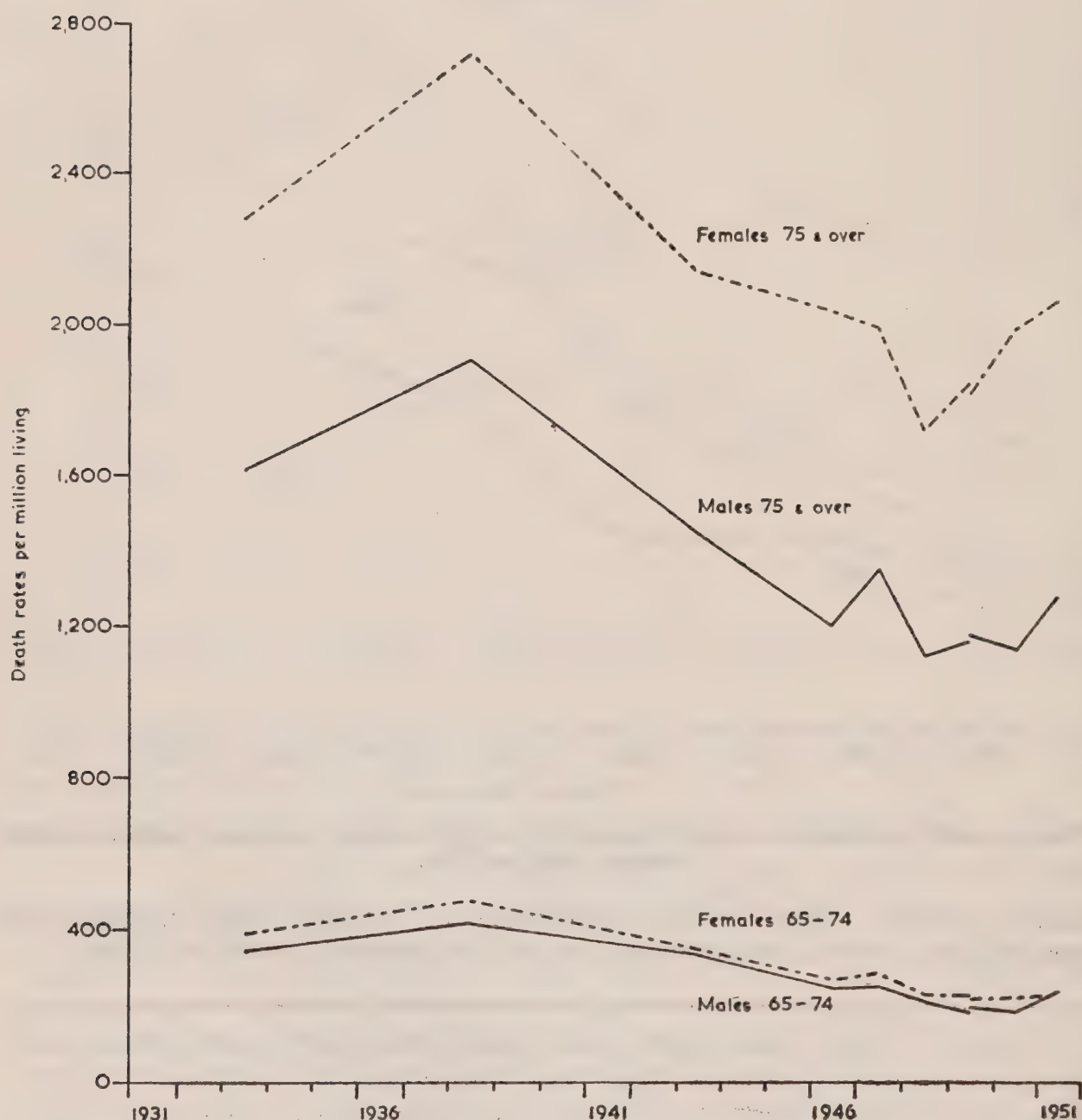
Year	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Males .. ..	0.9	0.8	1.0	0.9	1.2	0.8	1.1	1.7	1.1	1.5
Females .. ..	1.4	1.8	1.3	1.6	3.6	3.0	3.4	3.2	3.7	5.2

Year	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Males.. ..	2.0	1.7	1.8	1.3	2.2	2.0	3.6	4.8	4.9	6.1	5.4
Females .. ..	4.6	4.4	5.0	5.5	5.7	7.1	8.5	12.4	12.2	15.4	13.5

## Falls

In 1951, 1,816 men and 2,657 women died as a result of falls, increases of 15 per cent and 4 per cent respectively on the numbers in 1950. The trend of death rates since 1901 is shown in Table CXXV (page 246). Except at ages 10-19, male death rates were everywhere higher in 1951 than in 1950, and the Comparative Mortality Index rose from 0.61 to 0.71. Among elderly people, where the rates are heaviest, there were increases of 32 per cent and 4 per cent in male and female rates at ages 65-74 and of 12 per cent and 4 per cent at ages 75 and over. While at ages 65-74 the female rate was generally somewhat in excess of the male, at 75 and over the excess was considerable : 62 per cent in 1951. (See Diagram 16.)

Diagram 16



Death rates per million living attributed to accidental falls, 1931 to 1951.

Table CXXVI (page 247) shows the number of falls analysed by type and whether or not they occurred at work or at home. The commonest type of fall among males, accounting for 34 per cent of the deaths, was from one level to another, whereas falls on the same level caused 42 per cent of female deaths. Seventy per cent of males and 89 per cent of females experiencing fatal falls on stairs were aged 65 and over.



The death rates from accidental falls in the conurbations and in aggregates of areas of various population densities outside the conurbations are shown in Table CXXVII (page 248). West Yorkshire had the highest death rates for both men and women aged 65-74 and 75 and over. Tyneside and Merseyside had high rates for males aged 25-44 and 55-64 respectively, and in these two conurbations only did the male rate for all ages exceed the female. Outside the conurbations rates were generally lowest in rural areas, but apart from that, no clear pattern of association with population density emerges.

### Accidental mechanical suffocation

Deaths from this cause fall into two main groups, those due to suffocation by inhalation or ingestion and those caused by smothering in bed, cradle or from other mechanical pressure. Before 1949, these causes were not separately distinguished, the numbers and crude death rates per million living being as follows in 1941 to 1951 :—

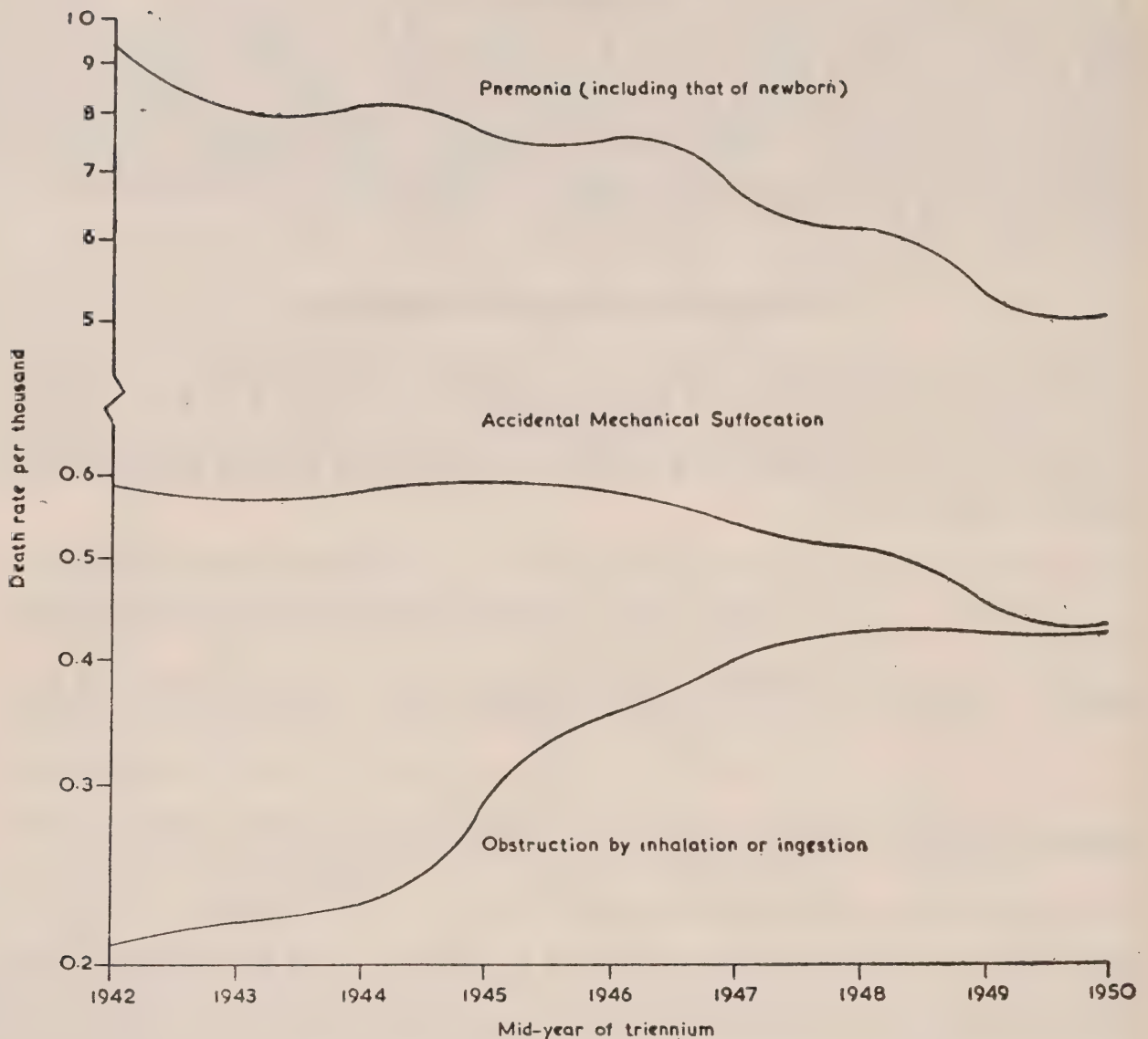
Year		1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Males	{ Numbers	407	400	392	445	469	558	658	528	519	495	477
	{ Rates ..	24	24	24	27	29	30	34	26	25	23	23
Females	{ Numbers	314	287	233	337	327	394	470	383	354	315	326
	{ Rates ..	15	13	11	16	15	18	21	17	16	14	14

Male rates increased from 24 per million in 1941-43 to 34 per million in 1947, since when they have declined to 23. Female rates also reached a peak of 21 in 1947 and have since decreased. During the three years 1949-51, 753 males and 551 females died from the inhalation or ingestion of food and other objects, compared with 690 males and 395 females who died from mechanical suffocation. The percentage age distribution of deaths from the two causes was :—

Age		0-	1-	5-	15-	25-	35-	45-	55-	65-	75 and over	All ages
Suffocation by in- gestion and in- halation.	{ M.	68	7	3	2	4	2	6	2	3	3	100
	{ F.	66	7	—	1	2	7	6	2	4	5	100
Suffocation by mechanical means	{ M.	76	2	2	2	5	4	5	2	1	1	100
	{ F.	93	3	1	—	1	1	—	1	—	—	100

The three-yearly moving average of infant mortality rates per 1,000 related live births for 1941 to 1951 is shown in Diagram 17. While the rate for mechanical suffocation shows a downward trend, that for suffocation by ingestion or inhalation has increased considerably. Since it is suggested that mechanical suffocation is related to acute respiratory infection, the average rate from pneumonia, including that of the newborn, is also shown ; the trend is similar to that for mechanical suffocation.

Diagram 17



Three-yearly moving average of death rates of children under 1 year per 1,000 related live births, 1941 to 1951.

### Deaths following vaccination or other prophylactic inoculation

This section includes deaths classified to E940–E942, vaccinia, post-vaccinal encephalitis and other complications of smallpox vaccination, and to E943, E944, post-immunization jaundice and hepatitis and other complications of prophylactic inoculation. Deaths classified to some other condition as the underlying cause, but with vaccination or inoculation either mentioned on the certificate or ascertained by enquiry to have been associated with the death are also mentioned here.

In 1951 five deaths were assigned to complications of vaccination against smallpox, viz :—

1. Female aged 2 months, certified as post-vaccination encephalitis. Terminal broncho-pneumonia (bilateral) was also mentioned on the certificate.
2. Male aged 3 months, certified as convulsion following post-vaccinal encephalitis.
3. Female aged 6 months, certified as pyæmia following pyoderma gangrenosa due to generalized vaccinia.
4. Male aged 5 years, certified as cardio-respiratory failure due to status epilepticus following post-vaccinal encephalitis.
5. Male aged 20 years, certified as cardiac and respiratory failure due to post-vaccinal encephalomyelitis.



In addition there were two deaths in which vaccination was mentioned on the death certificate but which were assigned to other causes :—

1. Male aged 3 months, certified as broncho-pneumonia due to measles, the child having been vaccinated ten days previously. The death was assigned to measles.
2. Male aged 5 months, certified as acute gastro-enteritis, with mention of vaccination in Part II of the death certificate. The death was assigned to gastro-enteritis and colitis.

**Table CXIV.—Accidents and violence : Proportion of deaths attributed to violent causes per 100 deaths from all causes, by sex and age, 1901–45 and 1946 to 1951**

		Males					Females				
		0–	15–	35–	65 and over	All ages	0–	15–	35–	65 and over	All ages
1901–10	..	3·22	12·88	7·22	2·31	5·05	2·85	3·06	2·18	1·54	2·31
1911–20	..	3·74	15·69	7·16	2·29	5·69	2·95	2·97	2·26	1·63	2·31
1921–30	..	4·43	15·49	7·06	2·37	5·48	3·06	4·02	2·74	1·79	2·49
1931–35	..	5·60	20·29	7·37	2·55	6·05	4·11	5·54	3·31	2·25	3·04
1936–40	..	7·30	29·58	8·67	2·89	7·30	5·73	9·52	4·82	2·83	4·10
1941–45	..	10·34	46·29	9·46	2·85	9·13	8·25	12·26	5·58	2·74	4·56
1946	..	7·86	25·39	6·09	2·22	5·08	5·91	5·84	3·45	2·27	3·00
1947	..	7·65	24·86	6·09	2·14	4·89	5·86	5·53	3·55	2·22	2·97
1948	..	8·91	24·61	6·04	2·13	4·88	7·06	5·56	3·70	2·18	3·02
1949	..	9·47	27·04	5·87	1·96	4·62	7·02	5·80	3·34	2·01	2·72
1950	..	9·20	30·36	5·93	1·94	4·56	7·24	6·59	3·44	2·13	2·80
1951	..	10·22	34·74	5·68	1·85	4·42	7·36	8·21	3·42	2·06	2·73

**Table CXV.—Accidents and violence : Death rates per million living by sex and age, 1901–45 and 1946 to 1951**

		All ages	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75 and over
<b>Males</b>													
1901–10	..	827	1,231	329	262	447	555	677	914	1,257	1,623	1,818	2,621
1911–20	..	857	934	395	304	596	902	828	894	1,082	1,395	1,715	2,757
1921–30	..	709	683	375	243	449	584	536	658	917	1,259	1,616	2,842
1931–35	..	770	697	370	228	533	739	602	640	921	1,271	1,599	3,358
1936–40	..	968	775	420	297	651	1,121	826	825	1,046	1,475	1,835	3,887
1941–45	..	1,167	897	612	435	935	2,192	1,263	870	1,008	1,323	1,691	3,183
1946	..	622	688	328	251	414	565	453	478	582	864	1,213	2,612
1947	..	628	664	381	228	398	528	465	465	633	850	1,210	2,786
1948	..	562	585	318	179	350	458	398	406	574	844	1,136	2,320
1949	..	569	547	299	194	386	509	387	433	583	805	1,084	2,554
1949*	..	567	541	298	193	386	508	387	431	579	797	1,085	2,556
1950*	..	562	461	252	153	376	555	423	418	579	807	1,120	2,451
1951*	..	591	489	261	188	363	619	476	426	587	809	1,142	2,754
<b>Females</b>													
1901–10	..	329	1,059	226	81	103	111	135	198	307	423	752	2,287
1911–20	..	300	767	234	98	117	120	127	179	272	382	728	2,364
1921–30	..	283	487	182	71	117	127	126	168	268	397	716	2,516
1931–35	..	346	505	201	81	142	155	161	194	297	443	878	3,044
1936–40	..	477	570	230	137	222	233	235	281	412	595	1,116	3,707
1941–45	..	499	687	322	206	256	274	276	307	404	552	959	3,064
1946	..	326	494	149	70	83	86	116	152	225	351	661	2,725
1947	..	334	503	162	63	82	81	109	145	237	356	703	2,707
1948	..	306	434	153	63	72	76	99	137	231	347	614	2,341
1949	..	306	387	128	63	81	92	85	128	212	336	617	2,513
1949*	..	302	378	128	63	79	92	81	126	212	330	612	2,492
1950*	..	308	338	127	47	80	81	79	125	223	323	606	2,698
1951*	..	321	350	97	45	87	87	86	125	229	327	649	2,850

\* According to the 6th Revision of the International Classification. Other years according to the classification in use at the time.



Table CXVI.—Motor vehicle and other road vehicle accidents. Numbers of deaths in 1951

Age group	Motor vehicle traffic accidents					Motor vehicle non-traffic accidents		Other road vehicle accidents		
	Total	Pedes-trian	Pedal cyclist	Motor cyclist or pas-senger	Others	Total	Pedes-trian	Total	Pedes-trian	Pedal cyclist
<b>Males</b>										
Pre-school age, 0-4 ..	194	179	5	1	9	6	6	3	3	—
School age, 5-14 ..	310	213	76	2	19	12	5	22	2	20
Working ages, 15-64 ..	2,178	448	316	1,002	412	74	27	157	22	122
Retirement, 65 and over..	611	462	76	14	59	11	5	56	32	18
<b>Total .. .. .</b>	<b>3,293</b>	<b>1,302</b>	<b>473</b>	<b>1,019</b>	<b>499</b>	<b>103</b>	<b>43</b>	<b>238</b>	<b>59</b>	<b>160</b>
<b>Females</b>										
Pre-school age, 0-4 ..	110	99	—	—	11	6	6	1	1	—
School age, 5-14 ..	107	90	9	—	8	4	3	2	—	1
Working ages, 15-64 ..	499	197	65	92	145	5	1	34	12	16
Retirement, 65 and over..	383	339	6	2	36	—	—	31	30	1
<b>Total .. .. .</b>	<b>1,099</b>	<b>725</b>	<b>80</b>	<b>94</b>	<b>200</b>	<b>15</b>	<b>10</b>	<b>68</b>	<b>43</b>	<b>18</b>

Table CXVII.—Motor vehicle accidents : Death rates per million living by sex and age, and Comparative Mortality Indices by sex, 1931-45 and 1946 to 1951

	All ages	0-	10-	15-	20-	25-	35-	45-	55-	65-	75 and over	C.M.I. (1938 =1.00)
<b>Males</b>												
1931-35 ..	208	184	93	204	368	210	133	153	206	363	678	1.12
1936-40 ..	216	159	86	176	363	209	152	171	257	411	749	1.01
1941-45 ..	199	198	113	152	227	193	149	160	228	353	556	0.92
1946.. ..	153	144	109	161	205	139	109	102	160	241	498	0.73
1947.. ..	146	134	75	127	209	139	106	111	147	246	460	0.70
1948.. ..	126	135	63	122	173	112	79	97	142	194	400	0.60
1949.. ..	140	123	80	147	226	117	103	101	137	229	451	0.67
<b>Females</b>												
1931-35 ..	68	106	34	49	50	31	29	49	95	181	267	1.17
1936-40 ..	64	84	30	49	48	29	27	45	85	173	279	1.02
1941-45 ..	56	106	42	42	40	29	26	37	61	107	172	0.86
1946.. ..	47	72	30	36	27	21	20	27	56	100	185	0.70
1947.. ..	47	71	26	37	23	17	22	33	54	100	177	0.69
1948.. ..	43	79	31	25	16	14	19	21	49	101	157	0.64
1949.. ..	41	65	32	32	30	10	16	22	44	95	151	0.60
<b>1949* to 1951*</b>												
1949* ..	41	66	32	32	30	10	16	22	44	95	151	0.61
1950* ..	46	64	25	40	30	17	19	35	48	84	200	0.67
1951* ..	49	58	22	47	37	19	23	35	54	101	201	0.71

\* According to the 6th Revision of the International Classification. Other years according to the classification in use at the time.

**Table CXVIII.—Motor vehicle accidents : Death rates per million living by sex and age in standard regions and population density aggregates, 1951**

	Males					Females				
	0–	15–	45–	65 and over	All ages	0–	15–	45–	65 and over	All ages
<b>ENGLAND AND WALES..</b>	105	173	134	316	161	48	27	43	135	49
<b>Conurbations (excluding Greater London) .. ..</b>	120	140	140	334	152	50	25	42	157	50
<b>Greater London .. ..</b>	65	133	117	363	134	34	29	44	184	53
<b>Areas outside conurbations</b>	111	196	138	299	172	51	27	44	113	48
Urban areas with populations of 100,000 and over ..	101	150	114	331	146	55	25	41	146	50
Urban areas with populations of 50,000 and under 100,000 .. .. .	113	136	107	303	140	50	21	45	124	47
Urban areas with populations under 50,000 .. ..	100	174	123	286	155	48	26	35	115	45
Rural areas .. .. .	130	267	183	293	220	52	33	55	85	49
<b>Regions :</b>										
Northern .. .. .	147	153	117	264	154	60	18	52	91	44
East and West Ridings ..	89	152	137	333	150	51	26	59	134	53
North Western .. ..	128	132	128	360	151	48	20	35	157	47
North Midland .. ..	123	188	117	342	170	60	22	43	123	48
Midland .. .. .	118	214	144	384	188	66	35	47	165	59
Eastern .. .. .	98	232	144	303	188	44	29	46	101	46
South East (excluding Greater London) .. ..	174	176	155	259	180	33	21	40	130	46
Southern .. .. .	63	221	176	269	180	31	41	33	89	44
South Western .. ..	75	209	158	242	170	32	29	40	70	38
Wales .. .. .	109	198	127	216	162	66	33	34	128	52



Table CXIX.—Deaths of pedestrians, pedal cyclists, motor cyclists, motor vehicle occupants and others in motor vehicle traffic accidents, motor vehicle non-traffic accidents and other road vehicle accidents, by sex, 1936-40, 1941-45 and 1946 to 1951

	1936-40 (Annual average)		1941-45 (Annual average)		1946		1947		1948		1949		1950		1951	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
<b>Pedestrians :</b>																
Motor vehicle traffic accidents	2,148	1,010	2,073	898	1,404	714	1,339	712	1,210	720	1,214	674	1,140	726	1,302	725
Motor vehicle non-traffic accidents																
Other road vehicle accidents	194	79	166	70	82	42	77	50	89	45	67	51	76	51	59	43
<b>Pedal cyclists :</b>																
Motor vehicle traffic accidents	777	131	557	140	481	97	417	81	461	86	496	78	475	80	473	80
Motor vehicle non-traffic accidents																
Other road vehicle accidents..	249	44	230	51	159	30	160	25	158	30	157	30	168	31	160	18
<b>Motor cyclists :</b>																
Motor vehicle traffic accidents	1,018	77	651	27	681	46	696	62	520	26	733	56	979	79	1,019	94
Motor vehicle non-traffic accidents																
Motor vehicle non-traffic accidents																
<b>Motor vehicle occupants and others :</b>																
Motor vehicle traffic accidents	631	191	762	167	592	178	583	181	474	141	498	118	505	150	499	200
Motor vehicle non-traffic accidents																
Other road vehicle accidents	36	3	47	11	24	8	28	4	20	5	32	7	50	13	19	7

Table CXX.—Proportion of deaths per 1,000 violent deaths according to nature of injury, 1951

		Fracture of skull	Fracture of spine or trunk	Fracture of limb	Head injury other than fracture	Internal injury	Laceration and open wounds	Poisoning	Others	Total
Motor vehicle accidents	.. ..	611	65	52	123	108	7	—	34	1,000
	{ M. } { F. }									
Other transport accidents	.. ..	372	55	45	105	102	38	26	257	1,000
	{ M. } { F. }									
Falls	.. ..	335	111	380	80	35	4	—	55	1,000
	{ M. } { F. }									
Suicide or self-inflicted injury	.. ..	27	11	2	55	12	76	486	331	1,000
	{ M. } { F. }									
Others	.. ..	106	49	14	44	80	21	714	541	1,000
	{ M. } { F. }									
		20	4	17	20	8	7	275	649	1,000



**Table CXXI.—Aircraft accidents : Average annual deaths, 1949-51**

	Average number of deaths	Per cent of total
Occupant of commercial transport aircraft .. .. .	86	35
Occupant of other aircraft.. .. .	143	57
Non-occupant of any aircraft, on airfield .. .. .	5	2
Non-occupant of any aircraft, not on airfield .. .. .	6	2
Other and unspecified aircraft accidents.. .. .	9	4
<b>Total aircraft accidents .. .. .</b>	<b>249</b>	<b>100</b>

Table CXXII.—Deaths from accidental poisoning according to the poisoning agent, 1942 to 1951

Poisoning agent		1942	1943	1944	1945	1946	1947	1948	1949	1950	1951
Barbituric acid and derivatives ..	{ M. F.	12 21	12 15	15 18	18 22	20 34	30 47	34 41	27 50	47 80	40 77
Aspirin and salicylates	{ M. F.	5 5	8 3	5 11	10 15	5 15	6 16	16 16	10 17	14 17	18 19
Other analgesic and soporific drugs ..	{ M. F.	10 11	11 6	5 4	11 11	6 6	14 13	10 10	10 9	8 4	11 10
Other and unspecified drugs .. ..	{ M. F.	8 6	9 7	3 6	11 16	10 8	8 13	12 10	9 8	8 7	12 11
<b>Total, all drugs ..</b>	<b>{ M. F.</b>	<b>35 43</b>	<b>40 31</b>	<b>28 39</b>	<b>50 64</b>	<b>41 63</b>	<b>58 89</b>	<b>72 77</b>	<b>56 84</b>	<b>77 108</b>	<b>81 117</b>
Corrosives, aromatics, acids and caustic alkalis .. ..	{ M. F.	13 9	12 9	13 5	12 13	14 10	13 6	10 4	10 4	15 9	8 9
Other solid and liquid substances ..	{ M. F.	28 17	17 7	18 12	21 7	30 6	21 11	34 18	27 13	21 25	32 17
Utility (illuminating) gas .. ..	{ M. F.	136 131	101 124	141 152	171 197	152 199	170 250	166 195	195 226	158 248	215 300
Motor vehicle exhaust and other carbon monoxide gas ..	{ M. F.				25 5	14 9	20 15	14 7	20 3	34 3	27 3
Other gases and vapours .. ..	{ M. F.				18 2	19 5	21 4	15 5	14 6	16 4	10 1
<b>Total gas poisoning</b>	<b>{ M. F.</b>	<b>150 133</b>	<b>125 126</b>	<b>155 155</b>	<b>214 204</b>	<b>185 213</b>	<b>211 269</b>	<b>195 207</b>	<b>229 235</b>	<b>208 255</b>	<b>252 304</b>

Table CXXIII.—Accidental poisoning : Numbers of deaths according to the poisoning agent, and percentage distribution according to place of occurrence, 1949 to 1951

Poisoning agent							Number of deaths					Percentage distribution					
							Home	Mine or quarry	Industrial places	Other	Total	Home	Mine or quarry	Industrial places	Other	Total	
Barbiturates	..	..	..	..	..	{1949 1950 1951}	42 71 59	— — —	— — —	36 56 58	78 127 117	54 56 50	— — —	— — —	46 44 50	100 100 100	
	Aspirin	..	..	..	..	..	{1949 1950 1951}	13 17 25	— — —	— — —	14 14 12	27 31 37	48 55 68	— — —	— — —	52 45 32	100 100 100
		Other drugs	..	..	..	..	..	{1949 1950 1951}	22 20 36	— — —	— — 1	14 7 7	36 27 44	61 74 82	— — 2	— — 2	39 26 16
Corrosives			..	..	..	..	..	{1949 1950 1951}	6 14 10	— — —	— — 1	8 10 6	14 24 17	43 58 59	— — 6	— — 6	57 42 35
	Other solids and liquids		..	..	..	..	..	{1949 1950 1951}	19 24 24	— — —	1 2 2	20 20 23	40 46 49	47 52 49	— — —	3 4 4	50 44 47
		Utility gas ..	..	..	..	..	..	{1949 1950 1951}	385 389 459	1 — —	14 4 8	23 13 48	423 406 515	91 96 89	0 — —	3 1 2	6 3 9
Other carbon monoxide			..	..	..	..	..	{1949 1950 1951}	7 6 11	1 1 —	9 24 11	6 6 8	23 37 30	31 16 37	4 3 —	39 65 37	26 16 26
	Other gases..		..	..	..	..	..	{1949 1950 1951}	4 6 8	8 8 1	7 6 4	7 — 3	21 20 11	20 30 27	14 40 9	33 30 37	33 — 27



Table CXXIV.—Accidental poisoning : Deaths of children at ages under 15 according to the poisoning agent, in the periods 1931-39 and 1940-49

1931-1939						1940-1949					
	Total under 15	Under 1 year	1-	5-	10-14		Total under 15	Under 1 year	1-	5-	10-14
BERRIES, FUNGI, etc.											
Berries of belladonna ..	4	—	4	—	—	Amanita phalloides ..	1	—	—	1	—
Hemlock .. ..	1	—	—	—	1	Deadly nightshade ..	5	—	4	1	—
Henbane .. ..	1	1	—	—	—	Dropwort .. ..	1	—	—	1	—
Horse chestnuts.. ..	1	—	—	—	1	Fungi .. ..	4	—	1	3	—
"Poisonous" berries ..	2	—	1	1	—	Hemlock .. ..	5	—	1	3	1
Privet berries .. ..	1	—	1	—	—	Woody nightshade ..	3	—	2	—	1
Water dropwort.. ..	1	—	1	—	—						
Woody Nightshade ..	1	—	1	—	—						
Total .. ..	12	1	8	1	2	Total .. ..	19	—	8	9	2
PILLS AND TABLETS											
Aspirin .. ..	3	—	3	—	—	Anæmia tablets ..	1	—	1	—	—
Barbiturate .. ..	1	—	—	1	—	Aspirin .. ..	13	1	12	—	—
Belladonna .. ..	1	—	1	—	—	Benadryl .. ..	1	—	1	—	—
Corrosive.. ..	1	—	1	—	—	Copper sulphate tablets	1	—	1	—	—
Digitalin .. ..	4	—	3	1	—	Digoxin, digitoxin ..	4	—	4	—	—
Easton syrup tablets ..	3	1	2	—	—	Ferrous sulphate, fer-					
Ferrous sulphate, fer-						solate .. ..	17	2	15	—	—
solate .. ..	2	—	2	—	—	Iron, copper and manga-					
Irritant pills .. ..	1	—	1	—	—	nese tablets .. ..	1	—	1	—	—
Luminal .. ..	1	—	—	1	—	Iron tablets .. ..	2	—	2	—	—
Meta tablets .. ..	1	—	1	—	—	Luminal .. ..	2	—	2	—	—
Nux vomica tablets ..	1	—	1	—	—	Phenobarbitone ..	6	—	4	1	1
" " and belladonna ..	1	—	1	—	—	Quinine pills .. ..	1	—	1	—	—
Quinine tablets .. ..	3	—	3	—	—	"Sleeping" tablets ..	1	—	1	—	—
Strychnine (pills and						Vegetable laxative					
tablets) .. ..	9	1	8	—	—	pills .. ..	1	1	—	—	—
Total .. ..	32	2	27	3	—	Total .. ..	51	4	45	1	1
LIQUIDS											
Acetic acid .. ..	4	1	3	—	—	A.B.C. liniment ..	1	—	1	—	—
Ammonia .. ..	5	3	2	—	—	Accumulator acid ..	1	—	—	—	1
Bichromate of potash ..	2	—	2	—	—	Acetic acid .. ..	2	1	1	—	—
Blue vitriol .. ..	1	—	1	—	—	Ammonia .. ..	6	2	3	—	1
Camphorated oil .. ..	4	—	4	—	—	Benzine .. ..	1	—	—	1	—
Chlorodyne .. ..	1	—	1	—	—	Camphorated liniment..	2	1	1	—	—
Cleansing fluid .. ..	1	—	1	—	—	Camphorated oil ..	2	—	2	—	—
Dinitro cresol .. ..	1	—	—	—	1	Carbolic acid .. ..	6	—	4	1	1
Disinfectant .. ..	1	—	—	1	—	Chloral .. ..	1	1	—	—	—
Easton's syrup .. ..	2	—	2	—	—	Chlorodyne .. ..	3	2	1	—	—
Hydrochloric acid ..	1	—	1	—	—	Creosote .. ..	1	—	1	—	—
Ipecacuanha .. ..	1	—	1	—	—	Cresol .. ..	1	—	1	—	—
Jeyes' fluid .. ..	1	—	1	—	—	Cresolene .. ..	1	—	1	—	—
Liniment.. ..	2	—	1	—	1	Dichlorethylene ..	1	—	—	1	—
Paraffin .. ..	3	—	3	—	—	Eucalyptus .. ..	1	1	—	—	—
Petrol .. ..	1	1	—	—	—	Hydrochloric acid ..	2	—	1	—	1
Soldering fluid .. ..	1	—	1	—	—	Iodine .. ..	1	—	1	—	—
Strychnine (Easton's						Kerosene .. ..	1	—	1	—	—
syrup) .. ..	1	—	1	—	—	Lethane .. ..	3	—	3	—	—
Turpentine .. ..	1	—	1	—	—	Liniment .. ..	1	—	1	—	—
Oil of wintergreen ..	7	—	6	1	—	Lysol .. ..	4	—	4	—	—
						Methyl alcohol ..	1	—	1	—	—
						Methyl salicylate ..	6	—	5	1	—
						Oil of citronella ..	1	—	1	—	—
						Oil of wintergreen ..	18	—	17	—	1
						Paint brush wash ..	1	—	1	—	—
						Paint solvent .. ..	1	—	1	—	—
						Paraffin .. ..	4	—	4	—	—
						Paraldehyde .. ..	1	—	—	—	1
						Petrol .. ..	3	—	3	—	—
						Quinine .. ..	12	1	11	—	—
						Soldering fluid ..	2	—	2	—	—
						Sulphane .. ..	1	—	1	—	—
						Sulphuric acid ..	2	—	2	—	—
						Tar preparation ..	1	—	1	—	—
						Tetrachloride ..	1	—	1	—	—
						Thawpiti .. ..	1	—	—	1	—
						Turpentine .. ..	1	—	1	—	—
						Window polish.. ..	1	—	1	—	—
Total .. ..	41	5	32	2	2	Total .. ..	100	9	80	5	6
TOTAL, THESE } M. 74		4	56	7	7	TOTAL, THESE } M. 161		13	126	13	9
AND OTHER } F. 56		4	46	5	1	FORMS OF } F. 116		7	91	12	6
POISONING						POISONING					
Percentage .. ..	100	6	79	9	6	Percentage .. ..	100	7	79	9	5

**Table CXXV.—Accidental falls : Death rates per million living by sex and age, and Comparative Mortality Indices by sex, 1901–45 and 1946 to 1951**

			All ages	0–	10–	15–	20–	25–	35–	45–	55–	65–	75 and over	C.M.I. (1938 =1.00)
<b>Males</b>														
1901–10	..	..	84	45	25	23	24	39	69	119	209	420	1,253	1.06
1911–20	..	..	107	38	30	39	36	56	93	155	254	454	1,373	1.29
1921–30	..	..	85	25	18	31	31	37	56	93	161	352	1,306	0.92
1931–35	..	..	93	25	18	31	33	37	47	79	146	338	1,609	0.92
1936–40	..	..	120	31	24	34	40	51	58	95	177	414	1,910	1.05
1941–45	..	..	109	35	26	40	30	41	58	87	157	337	1,448	0.93
1946	..	..	86	27	21	25	26	30	43	57	107	245	1,203	0.73
1947	..	..	97	31	26	33	42	36	50	68	108	254	1,352	0.80
1948	..	..	80	27	22	22	27	37	41	49	85	211	1,122	0.66
1949	..	..	78	20	18	28	31	33	38	57	68	185	1,162	0.63
1949*	..	..	79	25	18	27	28	32	35	55	71	191	1,174	0.66
1950*	..	..	74	14	18	19	25	29	34	50	71	183	1,139	0.61
1951*	..	..	86	17	17	17	34	35	39	51	84	242	1,279	0.71
<b>Females</b>														
1901–10	..	..	68	27	6	4	4	10	26	64	132	389	1,657	0.88
1911–20	..	..	69	20	6	5	5	8	20	50	108	356	1,752	0.83
1921–30	..	..	73	13	4	4	4	5	10	31	85	318	1,845	0.75
1931–35	..	..	100	14	5	3	3	6	8	30	92	388	2,283	0.90
1936–40	..	..	136	18	6	4	5	6	12	34	123	476	2,714	1.11
1941–45	..	..	118	17	8	5	6	6	11	26	81	346	2,135	0.85
1946	..	..	110	15	4	3	5	6	6	11	59	260	2,037	0.76
1947	..	..	111	11	7	9	4	4	5	15	58	286	1,947	0.75
1948	..	..	100	11	4	4	4	3	4	18	51	231	1,726	0.66
1949	..	..	105	10	6	3	2	2	4	13	50	232	1,840	0.69
1949*	..	..	105	12	6	4	1	2	5	15	51	230	1,822	0.69
1950*	..	..	113	8	2	2	1	3	5	14	45	230	1,994	0.73
1951*	..	..	117	10	—	2	5	3	3	12	46	240	2,068	0.75

\* According to the 6th Revision of the International Classification. Other years according to the classification in use at the time.



**Table CXXVI.—Numbers of deaths from falls, distinguishing those at work and at home, showing percentage at ages 65 and over, 1951**

Specification of fall	Total				At work		At home	
	Number		Proportion per 1,000					
	M.	F.	M.	F.	M.	F.	M.	F.
Falls on stairs .. ..	320	502	176	189	14	5	255	457
Percentage aged 65 and over	70	89			36	60	75	89
Falls from ladders .. ..	95	5	52	2	67	—	37	4
Percentage aged 65 and over	33	40			19	—	46	25
Other falls from one level to another .. ..	607	423	335	159	295	4	168	307
Percentage aged 65 and over	32	86			11	—	65	90
Falls on same level .. ..	516	1,111	284	418	21	6	218	791
Percentage aged 65 and over	84	94			38	17	91	96
Unspecified falls .. ..	278	616	153	232	9	1	143	370
Percentage aged 65 and over	77	95			22	100	91	95
<b>Total .. ..</b>	1,816	2,657	1,000	1,000	406	16	821	1,929
Percentage aged 65 and over	61	92			15	31	79	93

**Table CXXVII.—Accidental falls : Death rates per million living by sex and age in conurbations and population density aggregates, 1951**

				All ages	0—	5—	15—	25—	35—	45—	55—	65—	75 and over
<b>ENGLAND AND WALES ..</b>				{ M. 86 F. 117	17 13	17 3	26 4	35 3	39 3	51 12	84 46	242 240	1,279 2,068
<b>Conurbations :</b>													
Tyneside .. ..				{ M. 100 F. 94	26 —	16 —	20 —	117 —	136 —	36 17	51 64	192 219	1,300 2,143
West Yorkshire .. ..				{ M. 131 F. 157	— 29	27 —	12 19	9 8	79 —	109 15	108 73	389 321	2,143 2,778
South East Lancashire ..				{ M. 77 F. 95	10 20	6 —	24 7	83 —	27 5	42 5	52 53	257 270	1,148 1,717
Merseyside .. ..				{ M. 101 F. 95	15 31	55 9	85 19	53 —	31 10	24 21	207 65	167 200	1,643 1,917
West Midlands .. ..				{ M. 76 F. 88	— —	18 6	23 —	28 11	40 —	48 13	63 51	259 175	1,500 2,026
Greater London .. ..				{ M. 82 F. 110	17 150	13 4	23 2	22 1	38 1	44 21	67 51	335 252	1,260 1,902
<b>Areas outside the conurbations:</b>													
Urban areas with populations of 100,000 and over ..				{ M. 98 F. 121	12 8	20 —	32 —	43 5	28 5	49 10	99 47	326 270	1,589 2,264
Urban areas with populations of 50,000 and under 100,000				{ M. 109 F. 144	14 15	13 —	43 9	56 —	58 4	50 8	168 45	190 276	1,574 2,378
Urban areas with populations under 50,000 .. ..				{ M. 86 F. 130	25 18	18 6	16 2	38 3	50 4	66 11	68 43	205 238	1,140 2,156
Rural areas .. ..				{ M. 68 F. 106	22 3	14 3	24 4	13 4	18 —	39 5	71 31	153 188	1,000 1,839



Table CXXVIII.—Accidental burns : Deaths by sex according to place of occurrence, 1951

	Total	Place of occurrence									Other specified places	Places not specified
		Home	Farm	Mine and quarry	Industrial place and premises	Place for recreation and sport	Street and highway	Public building	Resident institution			
Accident caused by fire or explosion of combustible material (E.916) .. .. .	{ M. F. 311 440	158 418	2 —	95 —	41 3	— —	— —	4 3	2 4	8 4		1 8
Burns by clothing .. .. .	{ M. F. 64 294	50 277	— —	— —	9 1	— —	— —	1 3	1 3	2 4		1 6
from domestic fire ..	{ M. F. 22 91	20 88	— —	— —	— —	— —	— —	1 —	— 2	1 —		— 1
from gas fire .. .. .	{ M. F. 6 43	5 41	— —	— —	1 1	— —	— —	— 1	— —	— —		— —
from electric fire ..	{ M. F. 9 79	9 79	— —	— —	— —	— —	— —	— —	— —	— —		— —
other specified .. .. .	{ M. F. 20 55	11 46	— —	— —	7 —	— —	— —	— 2	1 1	1 4		— 2
not specified .. .. .	{ M. F. 7 26	5 23	— —	— —	1 —	— —	— —	— —	— —	— —		1 3
Burns by falling into fire ..	{ M. F. 31 49	30 49	— —	— —	1 —	— —	— —	— —	— —	— —		— —
Burns by other specified means .. .. .	{ M. F. 215 93	78 89	2 —	95 —	30 2	— —	— —	3 —	1 1	6 —		— 1
Burns, means not specified ..	{ M. F. 1 4	— 3	— —	— —	1 —	— —	— —	— —	— —	— —		— 1

# MEDICAL CERTIFICATION OF CAUSE OF DEATH

## Multiple Cause Analysis

In the Appendix to the 13th Annual Report of the Registrar General (1850) Farr mentioned the "secondary affections that supervene in the course of measles, scarlatina, phthisis and other diseases" and concluded that "at some subsequent period it will be right to investigate these double causes." It was not until 1911, however, that a tabulation of multiple or secondary causes was published by the General Register Office. The Annual Reports for the years 1911-14 contained tables showing the secondary conditions associated with causes assigned to numbers 1-19 of the International List then in use (the second, 1909, revision). The war of 1914-18 prevented publication of similar tables dealing with the remaining causes of the List but the work was practically completed at a later date and the results were kept in manuscript form.

A similar tabulation was made of deaths registered during 1921-30, and the results were published in Part IV of the Registrar General's Decennial Supplement, 1931. This analysis was based on the third revision of the International List (1919) and the rules in force at that time for the selection of one from two or more jointly stated causes.

A limited tabulation, of deaths registered during February, 1945, in certain areas of England and Wales, was produced by the General Register Office as part of the preparations for the international conference on causes of death in 1948. This analysis has not been published but exists in manuscript form. It was based on the fifth revision of the International List (1938), and on the form of medical certificate of cause of death and the methods of selection which were in use in England and Wales at that time and which were substantially the same as those adopted for international use by the Sixth Decennial Revision Conference in 1948.

This Conference put forward a "suggested form of Multiple-Cause Tabulation" which appeared on page 368 of Volume 1 of the International Statistical Classification of Diseases, Injuries and Causes of Death, 1948. A number of countries have prepared or are preparing tabulations of multiple causes. A paper has been published by the Central Institute of Statistics in Rome which deals with deaths in Italy in 1949 and 1950, classified according to the fifth revision of the International List.\* In France, the "Institut National de la Statistique et des Etudes Economiques" has published two reports on the use in Paris hospitals of a multiple-cause death certificate similar to the International Form of Medical Certificate of Cause of Death.† Canada and the United States are other countries known to be working on statistics of multiple causes.

The present analysis was undertaken by the World Health Organization Centre for Classification of Diseases‡ in collaboration with the General Register Office and is a preliminary investigation intended as much to explore the problems of this type of tabulation as to provide useful results. It deals with a 10 per cent sample of deaths registered in England and Wales during the first

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(\*) Barberi B. "Some preliminary figures on the joint causes of death in Italy".

(†) "Rapport statistique sur la mise en service du certificat de causes complexes de décès dans les hôpitaux de Paris," 1952 and 1953.

(‡) Tables prepared by the World Health Organization Centre have been distributed to National Committees on Vital and Health Statistics in document WHO/HS/Nat. Com/45.



six months of 1951. The "underlying cause" is that selected by the General Register Office coders according to the normal rules of selection, including rules in the Tabular List linking certain causes when jointly mentioned. Other causes on a certificate were each coded as a separate entity, without applying the linking rules, distinguishing those in Part I of the certificate, "complications," and those in Part II, "other contributory conditions." Second and subsequent mentions of terms in the same category were ignored.

Three tables were prepared from this material. Table CXXIX (page 252) is in the form suggested in the International Classification but without distinction of sex or age. It shows the frequency with which each three-digit category (and a few four-digit sub-categories) of the Detailed List appeared on the certificates of the sample as underlying cause, as complication and as other contributory condition. The absence of a three-digit category from Table CXXIX means that it did not occur at all in the sample. Table CXXX (page 260) is a cross-tabulation showing the occurrence of certain conditions as underlying cause with the same conditions, plus some residual groups, as complications or other contributory condition. Table CXXXI (page 266) analyses the "combination categories" occurring as underlying cause, i.e. those categories to which are assigned terms in two or more *different* categories when jointly mentioned on the certificate. It shows the total number of deaths assigned to each combination category, the number directly assigned to inclusion terms in the category, and the numbers assigned to combinations of jointly-mentioned terms in other categories. Combination categories to which no terms are directly assignable and whose components are obvious are not shown (e.g. 056·1, Whooping cough with pneumonia; 392 Otitis media with mastoiditis; 450·1 General arteriosclerosis with gangrene; the "with immaturity" sub-divisions of 760-773, certain diseases of early infancy).

In Tables CXXIX and CXXX, some of the categories or groups of categories shown as underlying cause are or include one of these combination categories. Their components do not appear separately in these tables, either as underlying cause, complication or other contributory condition. To this extent, therefore, Tables CXXIX and CXXX overstate the actual mention on certificates of the combination categories and understate mention of the component categories, and the explicit reference in Table CXXX to some combinations of underlying cause with secondary condition also understates the actual occurrence of such combinations. Table CXXXI provides the additional information about the hidden component categories.

For example, Table CXXX gives the total deaths assigned to 422 (Other myocardial degeneration) as 5,245 and its occurrence with 450 (General arteriosclerosis) as only 19. Table CXXIX shows the sub-categories of 422 and gives the deaths assigned to 422·1 (With arteriosclerosis) as 1,829. Table CXXXI shows that, of the deaths assigned to 422·1, only 467 were directly assignable there (cardiovascular degeneration, etc.); the other 1,362 deaths were linked combinations of 422·2 with 450. Table CXXIX, therefore, on account of this combination category, overstates mention of 422·1 and understates mention of 422·2 and 450, each by 1,362, and Table CXXX understates joint mention of 422 and 450 by the same amount.

This method of dealing with linked terms is necessary if the "underlying causes" of a multiple-cause analysis are to be those selected for the normal mortality analysis. It need not lead to any great difficulty since the combination categories are few, though their effect may be great. From Table CXXXI, the overstatements and understatements of Tables CXXIX and CXXX can be ascertained in the same manner as for the example of category 422·1 quoted above. All categories or groups of categories in Tables CXXIX and CXXX which are affected by Table CXXXI are marked with an asterisk—\*.



**Table CXXIX.—Multiple Cause Analysis. Frequency of statement of causes as underlying cause, complication, or other contributory condition**

Detailed List No.	Title	Underlying	Complication	Other contributory	Detailed List No.	Title	Underlying	Complication	Other contributory
Tuberculosis of respiratory system:					Diseases attributable to viruses— <i>contd.</i>				
001*	With mention of occupational disease .. ..	13	—	2	087	Chickenpox .. ..	—	—	1
002*	Pulmonary .. ..	651	8	61	088	Herpes zoster .. ..	1	—	3
003	Pleural .. ..	8	7	9	092	Infectious hepatitis ..	13	3	4
005	Tracheobronchial glandular, with symptoms .. ..	2	—	—	Malaria :				
007	Other respiratory .. ..	—	3	—	116	Other and unspecified forms of malaria .. ..	1	—	—
008	Unspecified site .. ..	—	—	1	Other infective and parasitic diseases :				
Tuberculosis, other forms :					125	Hydatid disease .. ..	2	—	—
010	Meninges and C.N.S. ..	59	25	8	131	Dermatophytosis .. ..	1	—	—
011	Intestines, peritoneum and mesenteric glands ..	13	7	5	132	Actinomycosis .. ..	1	—	—
012	Bones and joints, active and unspecified .. ..	11	2	2	134	Other fungus infections ..	1	—	—
013	Late effects, bones and joints .. ..	—	—	2	138	Other infective and parasitic diseases .. ..	3	—	1
014	Skin and subcutaneous cellular tissue .. ..	—	1	—	Malignant neoplasm of buccal cavity and pharynx :				
015	Lymphatic system .. ..	1	—	—	140	Lip .. ..	9	—	1
016	Genito-urinary system ..	16	1	2	141	Tongue .. ..	39	1	6
017	Adrenal glands .. ..	1	—	—	142	Salivary gland .. ..	7	—	—
019	Disseminated .. ..	10	19	4	143	Floor of mouth .. ..	5	1	—
Syphilis and its sequelæ :					144	Other parts of mouth, and mouth unspecified ..	23	—	1
020	Congenital syphilis ..	2	—	—	145	Oral mesopharynx .. ..	10	—	—
022	Aneurysm of aorta .. ..	25	—	—	147	Hypopharynx .. ..	13	—	—
023	Other cardiovascular syphilis	34	—	—	148	Pharynx, unspecified ..	14	—	—
024	Tabes dorsalis .. ..	7	1	10	Malignant neoplasm of digestive organs and peritoneum :				
025	General paralysis of insane	2	1	5	150	Esophagus .. ..	95	3	4
026	Other syphilis of C.N.S. ..	5	—	—	151	Stomach .. ..	803	11	30
027	Other forms of late syphilis	1	—	—	152	Small intestine, including duodenum .. ..	5	—	1
029	Syphilis, unqualified ..	1	—	1	153	Large intestine, except rectum .. ..	507	6	30
Gonococcal infection and other venereal diseases :					154	Rectum .. ..	321	4	34
030	Acute or unspecified gonorrhœa .. ..	1	—	—	155	Biliary passages and liver (stated to be primary) ..	76	2	4
Infectious diseases commonly arising in intestinal tract :					156	Liver (secondary and unspecified) .. ..	50	228	23
042	Other salmonella infections	2	—	—	157	Pancreas .. ..	151	6	3
044	Brucellosis (undulant fever)	—	—	1	158	Peritoneum .. ..	18	30	4
045	Bacillary dysentery ..	2	—	2	Malignant neoplasm of respiratory system :				
046	Amœbiasis .. ..	2	—	—	160	Nose, nasal cavities, middle ear, and accessory sinuses	23	2	2
048	Unspecified forms of dysentery .. ..	—	—	2	161	Larynx .. ..	55	—	1
Other bacterial diseases :					162	Trachea, and of bronchus and lung, specified as primary .. ..	202	2	3
050	Scarlet fever .. ..	2	—	—	163	Lung and bronchus, unspecified as to whether primary or secondary ..	481	13	5
051	Streptococcal sore throat ..	2	—	—	164	Mediastinum .. ..	12	2	1
052	Erysipelas .. ..	3	—	1	165	Thoracic organs (secondary)	1	97	9
053	Septicæmia and pyæmia ..	6	28	3	Malignant neoplasm of breast and genito-urinary organs :				
056	Whooping cough .. ..	44	1	1	170	Breast .. ..	330	—	48
	0 without mention of pneumonia .. ..	14	1	1	171	Cervix uteri .. ..	—	1	3
	1 with pneumonia .. ..	30	—	—	172	Corpus uteri .. ..	—	—	7
057	Meningococcal infections ..	21	—	1	174	Uterus, unspecified ..	—	7	3
061	Tetanus .. ..	3	1	1	175	Ovary, fallopian tube, and broad ligament .. ..	—	3	5
062	Anthrax .. ..	1	—	—	176	Other and unspecified female genital organs ..	—	1	1
Spirochætal diseases, except syphilis :					177	Prostate .. ..	—	—	28
072	Leptospirosis icterohæmorrhagica (Weil's disease) ..	2	—	—	178	Testis .. ..	—	1	—
Diseases attributable to viruses :					179	Other and unspecified male genital organs .. ..	—	—	1
080	Acute poliomyelitis .. ..	7	—	1	180	Kidney .. ..	—	—	2
081	Late effects of acute poliomyelitis .. ..	3	—	2	181	Bladder and other urinary organs .. ..	140	6	9
082	Acute infectious encephalitis	5	—	—					
083	Late effects of acute infectious encephalitis ..	12	—	6					
084	Smallpox .. ..	3	—	—					
085	Measles .. ..	25	1	3					
	0 without mention of pneumonia .. ..	13	1	3					
	1 with pneumonia .. ..	12	—	—					



Table CXXIX.—*contd.*

Detailed List No.	Title	Underlying	Complication	Other contributory	Detailed List No.	Title	Underlying	Complication	Other contributory
	Malignant neoplasm of other and unspecified sites :					Diseases of other endocrine glands			
190	Malignant melanoma of skin	10	—	1	270	Disorders of pancreatic internal secretion other than diabetes mellitus ..	1	1	—
191	Other malignant neoplasm of skin .. .. .	34	3	15	272	Diseases of pituitary gland	5	—	2
192	Eye .. .. .	5	—	—	273	Diseases of thymus gland ..	3	—	—
193	Brain and other parts of nervous system .. ..	62	40	5	274	Diseases of adrenal glands	6	5	2
194	Thyroid gland .. ..	15	2	—					
195	Other endocrine glands ..	4	1	—		Avitaminoses, and other metabolic diseases :			
196	Bone (including jaw bone).	37	22	13	286	Other avitaminoses and nutritional deficiency states .. .. .	4	6	7
197	Connective tissue .. ..	6	—	—	287	Obesity, not specified as of endocrine origin .. ..	8	5	27
198	Secondary and unspecified malignant neoplasm of lymph nodes .. ..	3	13	—	288	Gout .. .. .	1	—	2
199	Other and unspecified sites	54	687	88	289	Other metabolic diseases ..	4	4	—
	Neoplasms of lymphatic and hæmatopoietic tissues :								
200	Lymphosarcoma and reticulosarcoma .. ..	35	—	—		Diseases of blood, and blood-forming organs :			
201	Hodgkin's disease .. ..	33	—	1	290	Pernicious and other hyperchronic anæmias .. ..	58	6	57
202	Other forms of lymphoma (reticulosis) .. ..	5	—	1		·0 Pernicious anæmia ..	54	6	51
203	Multiple myeloma (plasmocytoma) .. .. .	6	1	1		·1, ·2 Spinal cord degeneration and other hyperchronic anæmias .. ..	4	—	6
204	Leukæmia and aleukæmia..	89	1	4	291	Iron deficiency anæmias (Hypochromic anæmias) ..	9	1	4
	·0 Lymphatic .. .. .	41	—	—	292	Other anæmias of specified type .. .. .	20	3	6
	·1 Myeloid .. .. .	37	—	4	293	Anæmia of unspecified type	6	50	66
	·2-·4 other and unspecified leukæmia .. ..	11	1	—	294	Polycythæmia .. .. .	3	7	—
205	Mycosis fungoides .. ..	1	—	—	295	Hæmophilia .. .. .	3	—	—
	Benign neoplasm :				296	Purpura and other hæmorrhagic conditions .. ..	7	—	—
210	Buccal cavity and pharynx	—	—	1	297	Agranulocytosis .. .. .	3	1	1
211	Other parts of digestive system .. .. .	4	—	—	298	Diseases of spleen .. ..	9	1	2
214	Uterine fibromyoma .. ..	9	—	2					
215	Other benign neoplasm of uterus .. .. .	1	—	—		Psychoses :			
216	Ovary .. .. .	3	—	5	300	Schizophrenic disorders (dementia præcox) .. ..	2	—	7
219	Kidney and other urinary organs .. .. .	11	—	9	301	Maniac-depressive reaction.	7	—	4
222	Other benign neoplasm of skin .. .. .	—	—	1	303	Paranoia and paranoid states .. .. .	1	—	—
223	Brain and other parts of nervous system .. ..	9	—	—	304	Senile psychosis .. .. .	48	8	68
224	Endocrine glands .. ..	1	—	—	305	Presenile psychosis .. ..	1	—	3
225	Bone and cartilage .. ..	1	—	1	306	Psychosis with cerebral arteriosclerosis .. ..	—	—	1
229	Other and unspecified organs and tissues ..	1	—	1	309	Other and unspecified psychoses .. .. .	2	3	12
	Neoplasm of unspecified nature :								
230	Digestive organs .. ..	4	—	2		Psychoneurotic disorders :			
231	Respiratory organs .. ..	4	—	3	310	Anxiety reaction without mention of somatic symptoms .. .. .	—	—	1
237	Brain and other parts of nervous system .. ..	32	3	5	311	Hysterical reaction without mention of anxiety reaction .. .. .	2	—	—
238	Skin and musculo-skeletal system .. .. .	2	—	—	315	Psychoneurosis with somatic symptoms (somatization reaction) affecting circulatory system ..	—	1	—
239	Other and unspecified organs .. .. .	3	1	—	317	Psychoneurosis with somatic symptoms (somatization reaction) affecting other systems .. .. .	3	—	—
	Allergic disorders:				318	Psychoneurotic disorders, others mixed and unspecified .. .. .	3	—	1
241	Asthma .. .. .	261	179	189					
243	Urticaria .. .. .	—	—	1		Disorders of character, behaviour and intelligence :			
	Diseases of thyroid gland :				322	Alcoholism .. .. .	1	1	1
250	Simple goitre .. .. .	—	1	3	323	Other drug addiction .. ..	1	—	—
251	Non-toxic nodular goitre ..	1	—	3	325	Mental deficiency .. .. .	13	1	23
252	Thyrotoxicosis with or without goitre .. .. .	39	1	19					
253	Myxœdema and cretinism.	16	1	23					
254	Other diseases of thyroid gland .. .. .	2	1	—					
	Diabetes mellitus :								
260	Diabetes mellitus .. ..	200	—	323					

Table CXXIX.—*contd.*

Detailed List No.	Title	Underlying	Complication	Other contributory	Detailed List No.	Title	Underlying	Complication	Other contributory
Vascular lesions affecting C.N.S.:					Chronic rheumatic heart disease:				
330	Subarachnoid hæmorrhage	132	23	3	410	Diseases of mitral valve ..	436	29	60
331	Cerebral hæmorrhage ..	2,090	182	40	411	Diseases of aortic valve, specified as rheumatic ..	23	2	—
332	Cerebral embolism and thrombosis ..	1,678	299	161	412	Diseases of tricuspid valve ..	2	2	1
334*	Other and ill-defined vascular lesions affecting C.N.S. ..	261	180	42	414*	Other endocarditis specified as rheumatic ..	99	7	8
Inflammatory diseases of C.N.S.:					415	Other myocarditis specified as rheumatic ..	25	—	—
340	Meningitis, except meningococcal and tuberculous..	26	35	5	416*	Other heart disease specified as rheumatic ..	56	37	9
341	Phlebitis and thrombophlebitis of intracranial venous sinuses ..	—	1	—	Arteriosclerotic and degenerative heart disease:				
342	Intracranial and intraspinal abscess ..	3	8	—	420	Arteriosclerotic heart disease, including coronary disease ..	3,241	275	98
343	Encephalitis, myelitis, and encephalomyelitis (except acute infectious) ..	13	6	2	0	Arteriosclerotic heart disease (so described) ..	25	1	3
344	Late effects of intracranial abscess or pyogenic infection ..	1	6	—	1	Heart disease specified as involving coronary arteries ..	3,144	202	74
345	Multiple sclerosis ..	56	2	38	2	Angina pectoris without mention of coronary disease ..	72	72	21
Other diseases of C.N.S.:					421	Chronic endocarditis not specified as rheumatic ..	126	183	53
350	Paralysis agitans ..	73	6	96	422*	Other myocardial degeneration ..	5,245	2,261	766
351	Cerebral spastic infantile paralysis ..	3	7	10	0	Fatty degeneration ..	33	18	10
352*	Other cerebral paralysis ..	34	136	127	1	With arteriosclerosis ..	1,829	122	72
353	Epilepsy ..	55	14	53	2	Other ..	3,383	2,121	684
355	Other diseases of brain ..	13	24	7	Other diseases of heart:				
356	Motor neurone disease and muscular atrophy ..	16	10	10	430	Acute and subacute endocarditis ..	26	37	2
0	Progressive muscular atrophy ..	11	10	9	431	Acute myocarditis, not specified as rheumatic ..	7	44	2
1-3	Other and unspecified manifestations ..	5	—	1	432	Acute pericarditis specified as non-rheumatic ..	1	1	—
357	Other diseases of spinal cord ..	8	—	3	433	Functional disease of heart	224	554	102
Diseases of nerves and peripheral ganglia:					434*	Other and unspecified diseases of heart ..	207	1,512	103
362	Brachial neuritis ..	—	1	—	Hypertensive disease:				
364	Polyneuritis and polyradiculitis ..	5	—	—	440*	Essential benign hypertension with heart disease	11	1	—
365	Erythredema polyneuritica	3	—	1	441*	Essential malignant hypertension with heart disease	14	—	—
366	Other and unspecified forms of neuralgia and neuritis	—	—	2	442*	Hypertensive heart disease with arteriolar nephrosclerosis ..	41	—	—
367	Other diseases of cranial nerves ..	—	1	—	443*	Other and unspecified hypertensive heart disease	735	18	22
Inflammatory diseases of eye:					444*	Essential benign hypertension without mention of heart ..	205	1,422	317
370	Conjunctivitis and ophthalmia	2	—	—	445*	Essential malignant hypertension without mention of heart ..	31	40	3
377	Inflammation of optic nerve and retina ..	—	—	1	446*	Hypertension with arteriolar nephrosclerosis without mention of heart ..	76	3	4
379	Other inflammatory diseases of eye ..	1	—	—	447*	Other hypertensive disease without mention of heart	102	5	2
Other diseases and conditions of eye:					Diseases of arteries:				
385	Cataract ..	1	—	5	450*	General arteriosclerosis ..	783	3,131	435
387	Glaucoma ..	—	—	6	0	without mention of gangrene ..	714	3,131	435
388	Other diseases of eye ..	—	—	1	1	with gangrene ..	69	—	—
389	Blindness ..	—	—	6	451	Aortic aneurysm specified as non-syphilitic; and dissecting aneurysm ..	28	17	6
Diseases of ear and mastoid process:					452	Other aneurysm, except of heart and aorta ..	1	2	2
391	Otitis media without mention of mastoiditis ..	19	2	—	453	Peripheral vascular disease	3	—	3
392	Otitis media with mastoiditis ..	2	—	—	454	Arterial embolism and thrombosis ..	11	10	4
393	Mastoiditis without mention of otitis media ..	4	1	—	455	Gangrene of unspecified cause ..	4	59	81
Rheumatic fever:					456	Other diseases of arteries..	7	2	—
400*	Rheumatic fever without mention of heart involvement ..	—	14	1					
401*	Rheumatic fever with heart involvement ..	26	2	2					
402	Chorea ..	2	—	1					



Table CXXIX.—*contd.*

Detailed List No.	Title	Underlying	Complication	Other contributory	Detailed List No.	Title	Underlying	Complication	Other contributory
Diseases of veins and other diseases of circulatory system :					Other diseases of respiratory system— <i>contd.</i>				
460	Varicose veins of lower extremities .. ..	19	8	18	525	Other chronic interstitial pneumonia .. ..	17	33	18
461	Hæmorrhoids .. ..	1	—	1	526	Bronchiectasis .. ..	103	62	46
462	Varicose veins of other specified sites .. ..	4	3	—	527*	Other diseases of lung and pleural cavity .. ..	69	131	208
463	Phlebitis and thrombo- phlebitis of lower extre- mities .. ..	16	6	9	1	Emphysema without mention of bronchitis ..	64	95	190
464	Phlebitis and thrombophle- bitis of other sites ..	1	11	7	0, 2,	other diseases of lung and pleural cavity..	5	36	18
465	Pulmonary embolism and infarction .. ..	32	199	31	Diseases of buccal cavity and oesophagus :				
466	Other venous embolism and thrombosis .. ..	25	52	18	532	Other inflammatory diseases of supporting structures of teeth .. ..	2	—	1
467	Other diseases of circulatory system .. ..	3	76	4	533	Disorders of occlusion, erup- and tooth development..	1	—	1
468	Certain diseases of lymph- nodes and channels ..	2	—	2	536	Stomatitis .. ..	1	—	—
Acute upper respiratory infections:					537	Diseases of salivary glands	1	—	3
470	Acute nasopharyngitis (common cold) .. ..	2	1	11	539	Diseases of oesophagus ..	3	4	2
472	Acute pharyngitis .. ..	5	1	—	Diseases of stomach and duodenum:				
473	Acute tonsillitis .. ..	5	2	—	540	Ulcer of stomach .. ..	181	13	85
474	Acute laryngitis and tracheitis .. ..	6	2	—	541	Ulcer of duodenum.. ..	148	5	36
475	Acute upper respiratory infection of multiple and unspecified sites.. ..	1	1	1	542	Gastrojejunal ulcer .. ..	2	—	—
Influenza :					543*	Gastritis and duodenitis ..	7	21	26
480*	Influenza with pneumonia ..	733	—	12	544	Disorders of function of stomach .. ..	2	2	3
481*	Influenza with other respira- tory manifestations and influenza unqualified ..	796	11	190	545	Other diseases of stomach and duodenum .. ..	6	50	15
482*	Influenza with digestive manifestations but with- out respiratory symptoms	6	—	—	Appendicitis :				
Pneumonia :					550*	Acute appendicitis .. ..	61	2	7
490*	Lobar pneumonia .. ..	262	46	25	551	Appendicitis, unqualified..	10	—	—
491*	Broncho pneumonia .. ..	1,132	1,119	151	553	Other diseases of appendix	—	—	1
492*	Primary atypical pneumonia	6	—	1	Hernia of abdominal cavity :				
493*	Pneumonia, other and un- specified .. ..	104	79	27	560	Hernia of abdominal cavity without mention of obstruction	15	2	16
Bronchitis :					561	Hernia of abdominal cavity with obstruction .. ..	69	—	22
500	Acute bronchitis .. ..	510	351	145	Other diseases of intestines and peritoneum :				
501*	Bronchitis, unqualified ..	266	227	224	570	Intestinal obstruction with- out mention of hernia ..	62	247	45
502*	Chronic bronchitis .. ..	2,046	298	978	571*	Gastroenteritis and colitis, except ulcerative, age 4 weeks and over .. ..	83	7	17
0	Bronchitis with emphysema .. ..	559	—	1	572	Chronic enteritis and ulcera- tive colitis .. ..	50	7	21
1	Other .. ..	1,487	298	977	573*	Functional disorders of intestines .. ..	1	—	—
Other diseases of respiratory system :					575	Abscess of anal and rectal regions .. ..	4	1	3
510	Hypertrophy of tonsils and adenoids .. ..	4	—	—	576*	Peritonitis .. ..	4	235	13
511	Peritonsillar abscess (quinsy) .. ..	2	1	—	577	Peritoneal adhesion .. ..	1	1	—
513	Chronic sinusitis .. ..	5	1	—	578	Other diseases of intestines and peritoneum.. ..	10	38	5
515	Nasal polyp .. ..	2	—	1	Diseases of liver, gall bladder and pancreas :				
516	Chronic laryngitis .. ..	1	—	—	580	Acute and subacute yellow atrophy of liver.. ..	7	6	—
517	Other diseases of upper respiratory tract ..	3	1	—	581	Cirrhosis of liver .. ..	60	13	18
518	Empyema .. ..	7	15	3	582	Suppurative hepatitis and liver abscess .. ..	2	2	1
519	Pleurisy .. ..	8	16	13	583	Other diseases of liver ..	1	4	—
520	Spontaneous pneumothorax	—	10	1	584	Cholelithiasis .. ..	44	2	17
521	Abscess of lung .. ..	4	34	6	585	Cholecystitis without men- tion of calculi .. ..	39	13	23
522	Pulmonary congestion and hypostasis .. ..	53	1,085	70	586	Other diseases of gall bladder and biliary ducts	7	41	19
523*	Pneumoconiosis due to silica and silicates (occu- pational) .. ..	51	1	21	587	Diseases of pancreas .. ..	22	4	1
524	Other specified pneumo- coniosis and pulmonary fibrosis of occupational origin .. ..	1	—	—					

Table CXXIX.—*contd.*

Detailed List No.	Title	Underlying	Complication	Other contributory	Detailed List No.	Title	Underlying	Complication	Other contributory
Nephritis and nephrosis :					Complications of the puerperium :				
590	Acute nephritis ..	20	6	2	682	Puerperal phlebitis and thrombosis ..	1	—	—
591	Nephritis with œdema, including nephrosis ..	23	1	4	683	Pyrexia of unknown origin during puerperium ..	2	—	—
592*	Chronic nephritis ..	307	46	73	684	Puerperal pulmonary embolism ..	4	—	—
593	Nephritis not specified as acute or chronic ..	26	57	16	687	Cerebral hæmorrhage in the puerperium ..	1	—	—
594	Other renal sclerosis ..	1	—	1	Infections of skin and subcutaneous tissue :				
Other diseases of urinary system :					690	Boil and carbuncle ..	5	—	2
600	Infections of kidney ..	58	104	23	691	Cellulitis of finger and toe ..	1	—	—
	0 Pyelitis, pyelocystitis, and pyelonephritis ..	53	103	23	692	Other cellulitis and abscess without mention of lymphangitis ..	4	—	5
	1, 2, Abscess and other infections of kidney ..	5	1	—	693	Other cellulitis and abscess with lymphangitis ..	1	—	1
601	Hydronephrosis ..	9	5	2	694	Acute lymphadenitis ..	1	—	—
602	Calculi of kidney and ureter ..	17	2	3	698	Other local infections of skin and subcutaneous tissue ..	1	—	—
603	Other diseases of kidney and ureter ..	2	3	2	Other diseases of skin and subcutaneous tissue :				
604	Calculi of other parts of urinary system ..	2	—	2	701	Eczema ..	1	—	4
605	Cystitis ..	12	38	18	703	Other dermatitis ..	2	1	2
606	Other diseases of bladder ..	3	20	32	704	Pemphigus ..	11	—	1
608	Stricture of urethra ..	3	3	4	705	Erythematous conditions ..	1	—	10
609	Other diseases of urethra ..	4	9	2	706	Psoriasis and similar disorders ..	—	—	1
Diseases of male genital organs :					708	Pruritis and related conditions ..	1	—	—
610	Hyperplasia of prostate ..	269	7	107	709	Corns and callosities ..	—	—	1
611	Prostatitis ..	13	1	2	710	Other hypertrophic and atrophic conditions of skin ..	2	1	2
612	Other diseases of prostate ..	1	1	10	713	Diseases of hair and hair follicles ..	—	—	1
614	Orchitis and epididymitis ..	1	—	1	715	Chronic ulcer of skin ..	9	36	33
617	Other diseases of male genital organs ..	1	—	—	Arthritis and rheumatism, except rheumatic fever :				
Diseases of breast, ovary, Fallopian tube and parametrium :					720	Acute arthritis due to pyogenic organisms ..	2	—	—
621	Other diseases of breast ..	1	—	3	722	Rheumatoid arthritis and allied conditions ..	36	16	198
624	Salpingitis and oophoritis, unqualified ..	3	—	—	723	Osteoarthritis (arthrosis) and allied conditions ..	16	2	38
626	Diseases of parametrium and pelvic peritoneum (female) ..	1	—	1	725	Arthritis, unspecified ..	—	—	28
Diseases of uterus and other female genital organs :					726	Muscular rheumatism ..	—	—	1
630	Infective disease of uterus, vagina, and vulva ..	—	1	—	727	Rheumatism, unspecified ..	1	19	19
631	Utero vaginal prolapse ..	6	1	3	Osteomyelitis and other diseases of bone and joint :				
633	Other diseases of uterus ..	2	7	5	730	Osteomyelitis and periostitis ..	4	1	2
634	Disorders of menstruation ..	1	1	—	731	Osteitis deformans ..	13	1	18
637	Other diseases of female genital organs ..	1	—	—	733	Other diseases of bone ..	3	—	3
Complications of pregnancy :					735	Displacement of intervertebral disc ..	2	—	—
640	Pyelitis and pyelonephritis of pregnancy ..	2	—	—	738	Other diseases of joint ..	—	—	2
642	Toxæmias of pregnancy ..	4	—	—	Other diseases of musculoskeletal system :				
646	Anæmia of pregnancy ..	1	—	—	741	Synovitis, bursitis, and tenosynovitis, without mention of occupational origin ..	—	—	1
649	Pregnancy associated with other conditions ..	—	—	1	744	Other diseases of muscle, tendon and fascia ..	9	—	—
Abortion :					745	Curvature of spine ..	1	—	11
650	Abortion without mention of sepsis or toxæmia ..	2	—	—	749	Other deformities ..	—	—	2
651	Abortion with sepsis ..	4	—	—	Congenital malformations :				
Delivery without complication :					750	Monstrosity ..	4	—	—
660	Delivery without complication ..	—	1	—	751	Spina bifida and meningocele ..	54	—	1
Delivery with specified complication :					752	Congenital hydrocephalus ..	8	16	33
672	Other postpartum hæmorrhage ..	1	—	—	753	Other congenital malformations of nervous system and sense organs ..	4	—	33
678	Other complications arising from pregnancy ..	1	—	—					



Table CXXIX.—*contd.*

Detailed List No.	Title	Underlying	Complication	Other contributory	Detailed List No.	Title	Underlying	Complication	Other contributory
Congenital malformations— <i>contd.</i>					Symptoms referable to systems or organs :				
754	Congenital malformations of circulatory system ..	107	4	19	780	Certain symptoms referable to nervous system and special senses .. ..	6	185	10
755	Cleft palate and harelip ..	1	—	2	782	Symptoms referable to cardiovascular and lymphatic system .. ..	22	4,091	122
756	Congenital malformations of digestive system ..	30	—	4		Symptoms referable to respiratory system ..	—	57	3
757	Congenital malformations of genito-urinary system ..	26	—	5	783	Symptoms referable to upper gastro-intestinal tract .. ..	—	183	21
758	Congenital malformations of bone and joint ..	1	—	—	784	Symptoms referable to abdomen and lower gastro-intestinal system ..	1	26	10
759	Other and unspecified congenital malformations not elsewhere classified ..	19	3	4	785	Symptoms referable to genito-urinary system ..	—	78	39
Birth injuries, asphyxia and infections of newborn :					786	Other general symptoms ..	—	2	—
760	Intracranial and spinal injury at birth .. ..	85	—	1	788	Abnormal urinary constituents of unspecified cause .. ..	1	2	2
761	·0 without mention of immaturity .. ..	64	—	1	Senility of ill-defined diseases :				
	·5 with immaturity .. ..	21	—	—	790	Nervousness and debility..	—	219	6
762	Other birth injury.. ..	21	2	1	792	Uræmia unqualified .. ..	5	875	49
	·0 without mention of immaturity .. ..	7	2	1	794*	Senility without mention of psychosis.. ..	597	1,811	1,070
763	·5 with immaturity .. ..	14	—	—	795	Ill-defined and unknown causes of mortality ..	4	418	20
	Post-natal asphyxia and atelectasis .. ..	137	18	8	E800- E802	Railway accidents.. ..	12	—	1
764	·0 without mention of immaturity .. ..	82	18	8		Motor vehicle traffic accidents.. ..	220	1	2
	·5 with immaturity .. ..	55	—	—	E810- E825	Motor vehicle non-traffic accidents.. ..	5	—	—
765	Pneumonia of newborn ..	50	13	4	E830- E835	Other road vehicle accidents	10	—	—
	·0 without mention of immaturity .. ..	34	13	4	E840- E845	Water transport accidents.	4	—	—
766	·5 with immaturity .. ..	16	—	—	E850- E858	Aircraft accidents .. ..	39	—	—
	Diarrhoea of newborn ..	6	—	—	E860- E866	Accidental poisoning by solid and liquid substances	19	—	1
767	·0 without mention of immaturity .. ..	2	—	—	E870- E888	Accidental poisoning by gases and vapours ..	25	—	1
	·5 with immaturity .. ..	4	—	—	E890- E895	Accidental falls .. ..	276	3	85
768	Umbilical sepsis .. ..	2	—	—	E900- E904	Other accidents .. ..	205	6	5
	·0 without mention of immaturity .. ..	1	—	—	E910- E936	Therapeutic misadventure and late complications of therapeutic procedures..	—	1	—
769	·5 with immaturity .. ..	1	—	—	E950- E959	Late effects of injury and poisoning .. ..	8	—	1
	Other sepsis of newborn ..	4	—	—	E960- E965	Suicide and self-inflicted injury .. ..	228	—	—
770	·0 without mention of immaturity .. ..	2	—	—	E970- E979	Homicide and injury purposely inflicted by other persons (not in war) ..	5	—	—
	·5 with immaturity .. ..	2	—	—	E980- E985	Fracture of skull, spine and trunk .. ..	235	9	11
771	Neonatal disorders arising from maternal toxæmia..	14	—	3	N800- N809	Fracture of upper limb ..	12	—	8
	·0-4, without mention of immaturity .. ..	3	—	3	N810- N819	Fracture of lower limb ..	183	1	69
772	·5-9, with immaturity..	11	—	—	N820- N829	Dislocation without fracture	3	—	—
	Other diseases peculiar to early infancy :				N830- N839	Head injury (excluding skull fracture) .. ..	91	21	5
773	Hæmolytic disease of newborn (erythroblastosis) ..	25	1	—	N850- N856	Internal injury of chest, abdomen and pelvis ..	49	1	1
	·0-2, without mention of immaturity .. ..	21	1	—	N860- N869	Laceration and open wound of face, neck and trunk.	13	—	—
774	·5-7, with immaturity..	4	—	—	N870- N879	Laceration and open wound of upper limb .. ..	1	—	—
	Hæmorrhagic disease of newborn .. ..	17	—	—	N880- N888	Laceration and open wound of lower limb .. ..	5	—	—
775	·0 without mention of immaturity .. ..	13	—	—	N890- N898	Laceration and open wounds of multiple location ..	9	1	—
	·5 with immaturity .. ..	4	—	—	N900- N908				
776	Nutritional maladjustment.	2	2	—					
	·0 without mention of immaturity .. ..	1	2	—					
777	·5 with immaturity .. ..	1	—	—					
	Ill-defined diseases peculiar to early infancy.. ..	12	14	5					
778	·0 without mention of immaturity .. ..	3	14	5					
	·5 with immaturity .. ..	9	—	—					
779	Immaturity with mention of any other subsidiary condition.. ..	12	—	—					
	Immaturity subsidiary to some other cause ..	—	1	4					
780	Immaturity unqualified ..	187	5	6					

Table CXXIX.—*contd.*

Detailed List No.	Title	Underlying	Complication	Other contributory	Detailed List No.	Title	Underlying	Complication	Other Contributory
Senility of ill-defined diseases— <i>contd.</i>					Senility of ill-defined diseases— <i>contd.</i>				
N910– N918	Superficial injury .. ..	2	—	—	N990– N999	Other and unspecified in- juries and reactions ..	165	35	17
N920– N929	Contusion and crushing with intact skin surface.	8	1	—	TOTALS				
N930– N936	Effects of foreign body entering through orifice.	22	8	—	001–795				
N940– N949	Burns .. .. .	48	1	18	E800–E999				
N950– N959	Injury to nerves and spinal cord without bone injury	5	—	—	N800–N999				
N960– N979	Effects of poisons .. ..	201	2	3	Total certificates ..				
N980– N989	Effects of weather, exposure, and related conditions ..	4	1	—	32,631				





Table CXXX.—Multiple Cause Analysis. Occurrence of certain conditions as underlying cause with the same conditions, plus some residual groups as complication or other contributory condition

Underlying cause (for titles, see column headings)	Complication or other contributory condition											
	Infective and parasitic diseases				Neoplasms							
	Tuber- culosis of respi- ratory system	Tuber- culosis, other forms	Syphilis and its sequelæ	Other	Malignant neoplasm of							Other
					Stomach	Large intes- tine, except rectum	Rec- tum	Biliary passages and liver	Trachea, lung and bron- chus	Breast	Blad- der and other urinary organs	
001-008	010-019	020-029	Rest of 001-138	151	153	154	155, 156	162, 163	170	181	Rest of 140-239	
001-008* ...	5	41	—	—	—	—	—	—	—	—	—	—
010-019 ...	1	23	—	2	—	—	—	—	—	—	—	1
020-029 ...	1	—	5	—	—	—	—	—	—	—	—	1
151 ...	3	1	—	5	—	2	—	24	—	—	—	154
153 ...	—	—	1	—	4	—	—	41	—	—	—	96
154 ...	—	—	—	—	1	2	—	24	2	—	—	55
155, 156 ...	—	—	—	—	—	1	—	10	—	—	1	18
162, 163 ...	3	—	—	—	—	—	—	5	—	—	—	59
170 ...	2	—	—	—	1	2	—	28	4	—	—	197
181 ...	—	—	—	—	—	—	—	1	—	—	—	18
241 ...	—	—	—	—	—	1	—	—	—	—	—	3
260 ...	1	—	—	3	—	—	—	—	—	2	—	3
290-0 ...	—	—	—	—	—	—	—	—	—	—	—	—
290-1-293 ...	—	—	—	—	—	—	—	—	—	—	—	—
300-309 ...	—	—	—	—	—	—	—	—	—	—	—	—
330-334* ...	2	1	3	3	2	7	5	—	1	4	—	28
340-345 ...	—	—	—	—	—	—	—	—	—	—	—	—
350 ...	—	—	—	—	—	—	—	—	—	—	—	—
353 ...	—	—	—	—	—	—	—	—	—	—	—	—
410-416* ...	1	—	—	—	—	1	—	—	—	3	—	—
420 ...	6	2	2	2	2	1	2	1	1	3	3	14
421 ...	1	—	—	1	—	—	—	—	—	—	—	—
422* ...	7	2	1	4	4	8	8	1	2	12	1	33
433 ...	—	—	1	—	—	—	—	—	—	1	—	2
440-447* ...	4	1	1	—	1	2	1	1	1	3	1	8
450* ...	—	—	—	2	1	1	1	—	—	2	1	5
455 ...	—	—	—	—	—	—	—	—	—	—	—	—
465 ...	—	—	—	—	—	—	—	—	—	—	—	1
480-483* ...	17	2	—	1	2	—	3	—	—	5	—	2
490-493, 763*...	6	—	2	6	6	2	3	—	—	3	1	13
500-502* ...	10	3	—	3	1	1	2	2	1	4	—	9
523, 524* ...	—	—	—	—	—	—	—	—	—	—	—	—
526 ...	—	—	—	—	—	—	—	—	—	—	—	2
540 ...	—	—	—	—	—	—	—	—	—	—	—	—
541 ...	1	—	—	2	—	1	—	—	—	—	—	1
550-553* ...	1	2	—	1	—	—	—	—	—	—	—	—
560, 561 ...	—	—	—	—	—	—	—	—	—	—	—	—
570 ...	1	—	—	—	1	1	—	—	—	—	—	1
571, 764, 785-6*	1	—	—	1	—	—	—	—	—	1	—	—
581 ...	—	—	—	—	—	—	—	—	—	—	—	1
584, 585 ...	—	—	—	—	—	1	—	—	—	1	—	—
590-594* ...	2	—	—	3	—	1	2	2	—	—	—	1
610 ...	—	—	—	—	—	—	—	—	—	—	—	—
722 ...	—	—	—	—	—	—	—	—	—	—	—	1
750-759 ...	1	—	—	1	—	—	—	—	—	—	—	1
794* ...	—	—	—	—	—	—	—	—	—	—	—	—
Other ...	14	—	2	27	15	1	11	117	11	4	6	443
Total ...	91	78	18	67	41	36	38	257	23	48	15	1,171



Table CXXX.—*contd.*

Underlying cause (for titles, see column headings)	Complication or other contributory condition									
	Allergic, endocrine system, metabolic, and nutritional diseases : diseases of the blood and blood-forming organs					Mental, psycho- neurotic and personality disorders		Diseases and symptoms of the nervous system and sense organs		
	Asthma	Diabetes mellitus	Perni- cious anæmia	Other anæmia	Other	Psychoses	Other	Vascular lesions affecting C.N.S.	Inflam- matory diseases of C.N.S.	Paralysis agitans
	241	260	290-0	290.1-293	Rest of 240-299	300-309	Rest of 300-326	330-334	340-345	350
001-008* ...	3	16	2	1	4	2	2	4	1	—
010-019 ...	—	—	—	—	2	—	1	—	5	—
020-029 ...	1	—	—	—	—	—	—	5	—	—
151 ...	3	—	2	10	3	—	—	4	—	1
153 ...	—	3	1	3	—	—	—	2	1	1
154 ...	—	3	—	—	—	—	1	2	—	—
155, 156 ...	—	1	—	—	1	—	—	—	—	—
162, 163 ...	—	2	1	—	—	—	—	5	—	—
170 ...	—	2	1	2	2	1	—	—	—	—
181 ...	—	—	—	—	—	—	—	1	—	—
241 ...	—	4	—	—	—	—	—	2	—	—
260 ...	—	—	—	—	—	—	—	21	1	1
290-0 ...	—	1	—	2	—	—	—	2	—	—
290.1-293 ...	—	—	—	3	2	—	—	2	—	—
300-309 ...	—	—	—	3	3	3	—	2	—	—
330-334* ...	11	49	4	5	8	10	3	172	6	16
340-345 ...	—	—	—	—	1	—	—	1	2	—
350 ...	1	—	—	—	—	—	—	4	—	—
353 ...	—	—	—	1	—	—	—	1	1	—
410-416* ...	7	2	2	—	6	—	1	51	—	—
420 ...	11	52	9	6	9	1	1	51	3	8
421 ...	2	—	—	—	—	—	—	8	—	—
422* ...	57	53	15	23	17	40	—	238	11	19
433 ...	3	4	—	—	2	—	—	24	—	—
440-447* ...	7	24	1	3	6	5	1	50	1	10
450* ...	3	11	—	1	5	9	—	1	—	1
455 ...	—	—	—	—	—	1	—	—	—	—
465 ...	—	—	—	—	—	1	—	—	—	—
480-483* ...	41	21	8	2	13	7	3	28	4	8
490-493, 763* ...	18	20	3	8	6	8	4	17	20	10
500-502* ...	161	9	4	8	7	9	2	36	2	7
523, 524* ...	1	—	—	—	—	—	—	—	—	—
526 ...	—	—	—	—	1	—	—	4	3	—
540 ...	—	3	—	7	—	—	—	—	1	—
541 ...	2	—	—	2	—	—	1	1	—	—
550-553* ...	—	—	—	—	—	—	—	—	1	—
560, 561 ...	—	—	—	—	1	—	—	2	—	1
570 ...	—	1	—	1	1	—	—	—	1	2
571, 764, 785.6* ...	1	1	—	1	1	—	1	1	—	—
581 ...	—	1	—	—	1	—	1	1	—	—
584, 585 ...	—	2	—	—	1	—	—	—	—	—
590-594* ...	3	8	—	3	1	—	—	28	3	2
610 ...	—	5	—	—	—	—	—	10	—	4
722 ...	—	—	—	1	1	—	—	—	—	1
750-759 ...	—	—	—	—	3	—	6	15	3	—
794* ...	—	—	—	—	—	—	—	—	—	—
Other ...	32	25	4	40	18	9	1	134	33	10
Total ...	368	323	57	136	126	106	29	930	103	102

Table CXXX.—*contd.*

Underlying cause (for titles, see column headings)	Complication or other contributory condition											
	Diseases and symptoms of the nervous system and sense organs ( <i>contd.</i> )		Diseases and symptoms of the circulatory system									
	Epilepsy	Other	Chronic rheumatic heart disease	Arterio-sclerotic heart (coronary) disease	Chronic endocarditis not specified as rheumatic	Other myocardial degeneration	Functional disease of heart	Hypertensive disease	General arteriosclerosis	Gangrene of unspecified cause	Pulmonary embolism and infarction	Other
353	Rest of 330-398, 780, 781	410-416	420	421	422	433	440-447	450	455	465	Rest of 400-468 782	
001-008* ...	—	2	3	1	3	34	—	3	6	—	3	50
010-019 ...	—	—	—	—	—	1	—	1	—	—	—	7
020-029 ...	—	1	—	1	3	—	—	1	—	—	—	43
151 ...	—	—	1	3	2	20	4	7	7	—	—	59
153 ...	2	5	1	1	—	8	1	6	7	1	—	51
154 ...	—	1	—	4	—	9	1	1	5	1	4	11
155, 156 ...	—	—	—	—	—	4	—	1	1	—	1	6
162, 163 ...	1	2	1	2	1	12	1	7	6	—	4	35
170 ...	—	5	—	1	—	7	4	1	1	—	1	15
181 ...	—	1	—	2	—	1	1	4	3	—	2	7
241 ...	—	2	2	5	—	81	4	1	8	—	—	121
260 ...	—	17	—	23	—	39	—	8	29	22	—	34
290-0 ...	—	2	1	2	—	12	—	—	—	—	—	15
290-1-293 ...	—	2	—	—	—	9	3	1	—	—	—	11
300-309 ...	—	2	—	1	—	7	—	1	1	—	—	7
330-334* ...	15	216	14	27	4	153	28	1,032	1,702	13	1	140
340-345 ...	—	5	—	—	—	3	—	1	1	—	—	7
350 ...	—	3	—	2	—	11	1	—	8	1	—	10
353 ...	3	4	—	1	—	5	1	1	3	—	—	6
410-416* ...	1	10	50	26	80	79	102	13	13	1	14	322
420 ...	1	24	6	82	10	545	44	385	1,141	12	19	489
421 ...	—	1	—	13	9	18	7	4	10	—	2	56
422* ...	6	58	5	—	20	25	236	2	19	39	15	1,259
433 ...	—	11	4	12	1	4	1	8	8	6	5	113
440-447* ...	1	35	1	—	7	12	55	20	211	11	7	393
450* ...	1	30	11	—	26	—	37	—	—	—	8	367
455 ...	—	—	—	—	—	—	—	—	—	—	—	—
465 ...	—	—	—	4	1	2	1	—	1	—	—	10
480-483* ...	5	17	13	20	18	338	15	41	53	2	4	368
490-493, 763*...	9	31	10	32	7	155	19	37	54	6	8	287
500-502* ...	7	21	19	42	12	1,083	30	78	136	3	5	1,100
523, 524* ...	—	—	—	2	—	9	—	1	2	—	—	23
526 ...	—	—	1	—	—	21	1	—	3	—	1	36
540 ...	—	—	2	4	—	13	—	3	4	—	4	15
541 ...	—	1	—	—	—	7	5	3	3	—	4	26
550-553* ...	—	—	—	1	—	6	—	2	1	1	2	13
560, 561 ...	—	—	—	—	2	5	1	3	1	—	4	15
570 ...	—	—	—	—	1	1	—	1	1	3	1	9
571, 764, 785-6*	—	3	—	—	—	7	—	2	2	—	—	8
581 ...	—	—	—	—	2	3	—	5	—	—	—	23
584, 585 ...	—	1	—	5	—	12	—	3	2	—	3	15
590-594* ...	1	9	2	2	3	53	3	76	19	1	—	50
610 ...	—	5	—	4	1	21	2	10	11	1	5	24
722 ...	—	—	—	—	—	2	—	1	—	1	—	9
750-759 ...	1	3	—	1	2	2	1	4	—	—	—	31
794* ...	—	3	—	—	—	—	—	—	—	—	—	72
Other ...	13	23	8	47	21	188	47	58	83	15	103	427
Total ...	67	556	155	373	236	3,027	656	1,837	3,566	140	230	6,195



Table CXXX.—*contd.*

Underlying cause (for titles, see column headings)	Complication or other contributory condition									
	Diseases and symptoms of the respiratory system (including pneumonia of the newborn)						Diseases and symptoms of the digestive system (including diarrhoea of the newborn)			
	Influ- enza	Pneu- monia	Bron- chitis	Pneumo- coniosis and pul- monary fibrosis (occupa- tional)	Bronchi- ectasis	Other	Ulcer of stomach	Ulcer of duode- num	Appen- dicitis	Hernia of abdo- minal cavity
	480-483	490-493, 763	500-502	523, 524	526	Rest of 470-527, 783	540	541	550-553	560, 561
001-008* ...	5	29	13	—	5	52	7	1	—	1
010-019 ...	—	1	3	—	1	—	1	—	—	—
020-029 ...	—	4	1	—	—	3	1	—	—	—
151 ...	1	14	10	1	—	11	4	—	—	—
153 ...	—	21	6	—	—	13	1	—	—	2
154 ...	—	8	1	1	—	2	1	—	—	—
155, 156 ...	—	5	1	—	—	2	4	—	1	—
162, 163 ...	—	44	15	2	3	37	3	—	—	—
170 ...	1	14	2	—	—	11	—	—	—	—
181 ...	—	6	—	—	—	4	—	—	—	—
241 ...	3	21	97	—	—	47	3	1	—	1
260 ...	4	14	8	—	—	7	—	—	1	1
290-0 ...	1	3	4	—	—	1	—	—	1	—
290-1-293 ...	2	6	1	—	—	2	—	—	—	—
300-309 ...	—	1	—	—	—	5	—	—	—	1
330-334* ...	9	130	116	—	1	134	9	3	—	1
340-345 ...	—	11	2	—	1	8	—	1	—	—
350 ...	—	15	3	—	—	2	—	—	—	—
353 ...	—	4	1	—	—	3	—	—	—	—
410-416* ...	14	20	68	—	2	32	1	—	—	—
420 ...	24	47	190	6	2	76	8	6	1	4
421 ...	2	4	9	—	—	9	1	1	—	—
422* ...	92	153	607	2	10	306	10	4	1	7
433 ...	4	8	22	—	—	13	1	—	—	—
440-447* ...	15	55	104	—	4	99	6	1	—	2
450* ...	9	35	63	1	1	39	2	1	—	1
455 ...	—	1	—	—	—	—	—	—	—	—
465 ...	1	4	1	—	—	2	—	—	—	—
480-483* ...	6	9	464	—	4	87	5	1	2	—
490-493, 763* ...	—	6	69	3	—	69	6	3	—	6
500-502* ...	2	298	143	3	—	98	10	5	1	3
523, 524* ...	—	8	13	—	—	6	—	1	—	—
526 ...	—	13	17	—	—	23	—	1	—	—
540 ...	2	15	9	1	—	12	—	1	—	1
541 ...	1	10	11	—	—	8	4	—	—	1
550-553* ...	—	7	1	—	—	5	—	—	—	1
560, 561 ...	—	13	—	—	—	4	—	—	—	—
570 ...	—	6	—	—	—	4	—	—	—	2
571, 764, 785-6* ...	—	5	1	—	—	1	—	1	—	1
581 ...	—	2	1	—	—	2	—	—	—	—
584, 585 ...	1	5	1	—	—	6	—	1	—	1
590-594* ...	2	15	18	—	—	19	5	—	1	—
610 ...	1	24	8	—	—	16	1	—	—	1
722 ...	—	7	4	—	—	6	—	1	—	—
750-759 ...	—	21	7	—	—	5	1	—	1	1
794* ...	—	—	—	—	—	—	—	—	—	—
Other ...	11	323	108	2	74	435	3	7	—	1
Total ...	213	1,465	2,223	22	108	1,726	98	41	10	40

Table CXXX.—*contd.*

Complication or other contributory condition									
Underlying cause (for titles, see column headings)	Diseases and symptoms of the digestive system (including diarrhoea of the newborn) ( <i>contd.</i> )					Diseases and symptoms of the genito-urinary system and uræmia			Maternal causes ; diseases of the skin and cellular tissue
	Intestinal obstruction without hernia	Gastro-enteritis and colitis, except ulceration, and diarrhoea	Cirrhosis of liver	Cholelithiasis and cholecystitis	Other Rest of 530-587, 784, 785 exc. 785-6	Nephritis and nephrosis	Hyperplasia of prostate	Other Rest of 590-637, 786, 792	
	570	571,764, 785-6	581	584,585		590-594	610		640-689, 690-716
001-008* ...	—	1	—	—	4	3	—	1	1
010-019 ...	3	—	—	—	—	—	2	1	1
020-029 ...	—	—	—	—	1	—	1	2	—
151 ...	6	1	—	—	57	—	—	—	2
153 ...	56	—	—	—	39	2	2	5	1
154 ...	19	1	—	—	16	1	1	15	1
155, 156 ...	—	—	2	3	10	1	—	—	—
162, 163 ...	1	1	—	—	5	—	—	2	1
170 ...	2	—	—	—	1	—	—	4	—
181 ...	1	—	1	—	7	4	—	52	—
241 ...	—	—	—	—	1	1	—	2	—
260 ...	—	—	—	—	1	4	—	6	—
290-0 ...	—	—	—	—	1	1	—	1	—
290-1-293 ...	—	—	—	—	1	—	—	2	—
300-309 ...	—	—	—	—	—	—	—	1	—
330-334* ...	—	—	1	3	12	12	10	26	11
340-345 ...	1	1	—	—	1	—	—	5	1
350 ...	—	—	—	1	1	—	2	2	—
353 ...	—	—	—	—	—	—	—	—	1
410-416* ...	5	—	—	—	4	3	—	4	1
420 ...	12	2	2	12	18	10	22	—	3
421 ...	—	—	—	—	—	—	1	1	—
422* ...	12	5	6	11	47	34	17	58	23
433 ...	3	1	1	1	3	—	2	2	—
440-447* ...	1	—	—	3	8	18	9	122	4
450* ...	2	1	—	1	3	6	3	48	6
455 ...	—	—	—	—	—	—	—	—	—
465 ...	—	—	—	—	—	—	—	—	—
480-483* ...	—	2	1	—	10	8	2	11	3
490-493, 763*...	6	5	2	2	13	9	9	23	5
500-502* ...	2	2	1	—	15	7	11	31	6
523, 524* ...	—	1	—	—	1	—	1	—	1
526 ...	—	—	—	—	—	—	—	1	—
540 ...	12	—	—	1	115	—	2	11	—
541 ...	9	—	—	—	104	—	—	2	—
550-553* ...	18	—	—	—	41	—	—	5	—
560, 561 ...	35	—	—	—	15	—	1	2	—
570 ...	18	—	—	—	18	—	—	4	—
571, 764, 785-6*	—	—	—	—	3	—	—	2	—
581 ...	—	—	—	—	18	2	—	1	—
584, 585 ...	6	—	—	9	44	1	—	7	—
590-594* ...	1	—	—	2	5	4	1	220	1
610 ...	3	—	—	—	4	10	—	317	4
722 ...	—	—	—	—	1	—	—	—	2
750-759 ...	3	—	1	1	3	4	1	15	1
794* ...	—	—	—	—	—	—	—	16	—
Other ...	55	1	13	5	118	61	14	320	23
Total ...	292	25	31	55	769	206	114	1,350	103



Table CXXX.—*contd.*

Underlying cause (for titles, see column headings)	Complication or other contributory condition						Total certificates assigned to underlying cause	
	Diseases and symptoms of the bones and organs of movement		Congenital malformations	Certain diseases of early infancy except pneumonia and diarrhoea of newborn	Other symptoms, senility and ill-defined conditions			Total in 001-795
	Rheumatoid arthritis and allied conditions	Other			Senility	Other		
722	Rest of 720-749, 787	750-759	760-762, 765-776	794	Rest of 788-795			
001-008* ...	6	1	1	—	1	32	350	674
010-019 ...	—	—	—	1	—	10	68	111
020-029 ...	—	—	—	—	1	1	77	77
151 ...	5	1	—	—	—	84	512	803
153 ...	—	1	—	1	4	55	445	507
154 ...	—	1	—	—	6	21	222	321
155, 156 ...	—	—	—	—	2	8	84	126
162, 163 ...	1	1	—	—	9	30	302	683
170 ...	1	—	—	—	10	11	334	330
181 ...	—	—	—	—	6	6	128	140
241 ...	—	1	—	—	5	3	420	261
260 ...	—	—	—	—	14	14	278	200
290-0 ...	1	1	—	—	6	1	59	54
290-1-293 ...	—	—	—	—	4	—	51	39
300-309 ...	1	—	—	—	10	1	50	61
330-334* ...	23	4	4	—	345	15	4,554	4,161
340-345 ...	—	—	—	—	—	5	58	99
350 ...	—	—	—	—	8	2	77	73
353 ...	1	—	—	—	2	—	39	55
410-416* ...	7	26	—	—	16	3	991	641
420 ...	19	10	2	—	120	5	3,549	3,241
421 ...	—	—	1	—	5	—	166	126
422* ...	70	36	—	—	1,251	28	5,030	5,245
433 ...	—	2	—	—	18	2	293	224
440-447* ...	9	5	—	—	86	9	1,445	1,215
450* ...	5	4	—	—	168	29	952	783
455 ...	—	—	—	—	2	1	5	4
465 ...	—	—	—	—	2	1	32	32
480-483* ...	11	7	3	1	147	22	1,867	1,535
490-493, 763* ...	9	7	10	3	127	34	1,237	1,554
500-502* ...	21	19	6	3	229	13	3,747	2,822
523, 524* ...	—	1	—	—	—	—	71	52
526 ...	2	—	—	—	—	3	133	103
540 ...	3	1	—	—	6	10	258	181
541 ...	—	—	1	—	5	6	222	148
550-553* ...	—	—	—	—	1	10	120	71
560, 561 ...	—	—	—	3	3	9	120	84
570 ...	—	—	—	—	5	5	89	62
571, 764, 785-6* ...	2	—	8	6	9	6	76	89
581 ...	—	—	—	—	1	1	66	60
584, 585 ...	1	—	—	—	5	1	135	83
590-594* ...	3	2	—	—	15	7	599	377
610 ...	2	—	—	—	26	7	527	269
722 ...	—	—	—	—	11	4	53	36
750-759 ...	—	2	25	45	—	4	216	254
794* ...	—	—	—	—	—	5	96	597
Other ...	11	15	3	8	190	145	3,936	3,968
Total ...	214	148	64	71	2,881	669	34,139	32,631

Table CXXXI.—Multiple Cause Analysis. Components of combination categories occurring as underlying cause

001.	Respiratory tuberculosis with mention of occupational disease of lung	..	13
	Directly assignable to 001. (e.g. collier's phthisis, silicotuberculosis)	..	3
002,	523 .. .. (pulmonary tuberculosis with silicosis)	..	10
334.	Other and ill-defined vascular lesions affecting central nervous system	..	261
	Directly assignable to 334. (e.g. cerebral arteriosclerosis)	.. ..	233
352,	444 .. .. (hemiplegia due to hypertension)	.. ..	8
352,	444, 450 .. (hemiplegia due to hypertension and arterio-	.. ..	2
	sclerosis)	.. ..	18
352,	450 .. .. (hemiplegia due to arteriosclerosis)	.. ..	18
401.	Rheumatic fever with heart involvement	.. ..	26
	Directly assignable to 401 (e.g. active rheumatic endocarditis)	.. ..	16
400,	414 .. .. (rheumatic fever with rheumatic endocarditis)	.. ..	2
400,	416 .. .. (rheumatic fever with rheumatic carditis)	.. ..	4
400,	434 .. .. (rheumatic fever with other heart disease)	.. ..	4
422.1	Myocardial degeneration with arteriosclerosis	.. ..	1,829
	Directly assignable to 422.1. (e.g. cardiovascular degeneration)	.. ..	467
422.2,	450 .. .. (myocardial degeneration with arteriosclerosis)	.. ..	1,362
440.	Essential benign hypertension with heart disease	.. ..	11
	Directly assignable to 440. (e.g. benign hypertensive heart disease)	.. ..	4
444,	422.2 .. .. (benign hypertension with myocardial	.. ..	1
	degeneration)	.. ..	6
444,	434 .. .. (benign hypertension with other heart disease)	.. ..	6
441.	Essential malignant hypertension with heart disease	.. ..	14
	Directly assignable to 441. (e.g. malignant hypertensive heart disease)	.. ..	2
445,	422.2 .. .. (malignant hypertension with myocardial	.. ..	6
	degeneration)	.. ..	6
445,	434 .. .. (malignant hypertension with other heart	.. ..	6
	disease)	.. ..	6
442.	Hypertensive heart disease with arteriolar nephrosclerosis	.. ..	41
	Directly assignable to 442. (e.g. cardiorenal sclerosis)	.. ..	26
446,	422.2 .. .. (arteriosclerotic nephritis with myocardial	.. ..	4
	degeneration)	.. ..	4
446,	434 .. .. (arteriosclerotic nephritis with other heart	.. ..	1
	disease)	.. ..	1
446,	443 .. .. (arteriosclerotic nephritis with hypertensive	.. ..	1
	heart disease)	.. ..	1
422.1,	592 .. .. (cardiovascular degeneration with chronic	.. ..	2
	nephritis)	.. ..	2
422.2,	450, 592 (myocardial degeneration with arteriosclerosis	.. ..	7
	with chronic nephritis)	.. ..	7
443.	Other and unspecified hypertensive heart disease	.. ..	735
	Directly assignable to 443. (e.g. hypertensive heart disease)	.. ..	91
444,	422.2 .. .. (hypertension with myocardial degeneration)	.. ..	453
444,	434.1 .. .. (hypertension with congestive heart failure)	.. ..	191
446.	Hypertension with arteriolar nephrosclerosis without mention of heart	.. ..	76
	Directly assignable to 446. (e.g. arteriosclerotic nephritis)	.. ..	29
450,	592 .. .. (arteriosclerosis with chronic nephritis)	.. ..	47



Table CXXXI.—*contd.*

447.	Other hypertensive disease without mention of heart .. .. .	102
	Directly assignable to 447. (e.g. arteriosclerotic hypertensive vascular disease) .. .. .	8
444,	450 .. .. (hypertension with arteriosclerosis) .. .. .	94
480.	Influenza with pneumonia .. .. .	733
	Directly assignable to 480. (e.g. influenzal pneumonia) .. .. .	284
481,	490 .. .. (influenza with lobar pneumonia) .. .. .	29
481,	491 .. .. (influenza with bronchopneumonia) .. .. .	362
481,	492 .. .. (influenza with primary atypical pneumonia) .. .. .	2
481,	493 .. .. (influenza with other or unspecified pneumonia) .. .. .	56
482.	Influenza with digestive manifestations, but without respiratory symptoms .. .. .	6
	Directly assignable to 482. (e.g. gastric influenza) .. .. .	2
481,	543 .. .. (influenza with disease of stomach) .. .. .	1
481,	571 .. .. (influenza with diarrhoea) .. .. .	2
481,	573 .. .. (influenza with mucous colitis) .. .. .	1
502.0	Bronchitis with emphysema .. .. .	559
	Directly assignable to 502.0. (e.g. emphysematous bronchitis) .. .. .	4
501,	527.1 .. .. (bronchitis with emphysema) .. .. .	72
502.1,	527.1 .. .. (chronic bronchitis with emphysema) .. .. .	483
502.1.	Other chronic bronchitis .. .. .	1,487
	Directly assignable to 502.1 (e.g. chronic bronchitis, senile bronchitis) .. .. .	1,433
501,	794 .. .. (bronchitis due to senility) .. .. .	54
550.1.	Acute appendicitis with peritonitis .. .. .	56
	Directly assignable to 550.1 (e.g. appendix abscess) .. .. .	45
550.0,	576 .. .. (acute appendicitis with peritonitis) .. .. .	11

Proportion of Bodies Seen after Death

The usual summary of the percentage of deaths for which the body was seen after death by the certifying practitioner or which were investigated by a coroner is given below. The figures for 1950 and 1951 are based on an examination of a sample of one medical certificate in seven.

	1928	1933	1947	1950*	1951*
Seen after death .. .. .	51.0	53.7	60.9	66.8	67.9
Inquest or Coroner's P.M. without inquest or other cases reviewed by Coroners .. .. .	11.2	11.2	14.0	19.0	19.7
Cases certified by Medical Practitioners .. .. .	39.8	42.5	46.9	47.8	48.2
Not seen after death .. .. .	48.5	46.1	38.8	33.8	31.8
No statement .. .. .	0.5	0.2	0.3	0.4	0.3
Total .. .. .	100.0	100.0	100.0	100.0	100.0
Total deaths in year .. .. .	460,389	496,465	517,615	510,301	549,380

\* Estimated from a sample of medical certificates.

Both the proportion seen by certifying practitioners and the proportion investigated by coroners continued to increase. The statement by a certifying practitioner is made when he signs the medical certificate of cause of death and since there are likely to be occasions when he subsequently sees the body the proportion seen after death may be understated.

# GREAT BRITAIN AND IRELAND

## Vital Statistics

Table A1 shows the census populations, by sex, of the several countries of Great Britain and Ireland for each census since 1821, and mid-year estimates for each of the last 35 years. Population estimates, marriages, births, deaths and infant deaths for the current year are shown in Table W and repeated, with comparative figures for earlier years, in Table CXXXII.

**Table CXXXII.—Great Britain and Ireland. Vital Statistics, 1938 and 1946 to 1951**

			Great Bri- tain and Ireland	England and Wales	Scotland	Northern Ireland	Irish Republic
Estimated Mid-Year Home Population (in thousands)							
1951	{ Males...	...	25,670	21,049	2,445	669	1,507
	{ Females	...	27,576	22,751	2,669	704	1,452
	{ Persons	...	53,246	43,800	5,114	1,373	2,959
Marriages							
1951	...	...	427,281	360,624	41,383	9,414	15,860
Persons married per 1,000 living :							
1938	...	...	16.8	17.6	15.5	13.4	10.1
1946	...	...	17.6	18.0	17.7	14.5	11.8
1947	...	...	18.0	18.6	17.2	14.1	11.0
1948	...	...	17.6	18.2	16.8	13.7	10.8
1949	...	...	16.6	17.1	16.0	13.4	10.9
1950	...	...	15.8	16.3	15.5	13.2	10.9
1951	...	...	16.0	16.5	16.2	13.7	10.7
Live Births*							
1951	...	...	859,232	677,529	90,639	28,477	62,587
Per 1,000 living :							
1938	...	...	15.7	15.1	17.7	20.0	19.4
1946	...	...	19.6	19.2	20.2	22.3	22.9
1947	...	...	20.8	20.5	21.9	23.2	23.2
1948	...	...	18.3	17.8	19.3	21.7	22.0
1949	...	...	17.2	16.7	18.4	21.2	21.5
1950	...	...	16.5	15.8	17.7	20.9	21.3
1951	...	...	16.1	15.5	17.7	20.7	21.2
Deaths†							
1951	...	...	675,198	549,380	65,778	17,628	42,412
Per 1,000 living :							
1931-38‡	...	...	12.4	12.0	13.3	14.4	14.2
1946	...	...	12.3	12.0	13.1	12.5	14.0
1947	...	...	12.3	12.0	12.9	12.6	14.8
1948	...	...	11.0	10.8	11.8	11.2	12.1
1949	...	...	11.8	11.7	12.3	11.4	12.7
1950	...	...	11.7	11.6	12.4	11.6	12.7
1951	...	...	12.7	12.5	12.9	12.8	14.3

\* England and Wales : occurrences ; remainder : registrations.

† Deaths include those of non-civilians registered in the country. Death rates, except for the Irish Republic, are based on civilian deaths and populations for 1946. From 1947 to 1949 inclusive, the death rates for England and Wales and for Northern Ireland are based on total deaths and populations, and those for Scotland on total deaths and populations excluding armed forces overseas in 1939. The 1950 and 1951 death rates are based on total deaths and home populations.

‡ Crude death rates in 1938 were rather lower than in adjacent years.



Table CXXXII.—*contd.*

	Great Bri- tain and Ireland	England and Wales	Scotland	Northern Ireland	Irish Republic
Deaths of Infants under 1 year§					
1951 ... ..	27,627	20,223	3,391	1,173	2,840
Per 1,000 live births :					
1938 ... ..	55	53	70	75	67
1946 ... ..	44	43	54	54	65
1947 ... ..	45	41	56	53	68
1948 ... ..	37	34	45	46	50
1949 ... ..	35	32	41	45	51
1950 ... ..	32	30	39	40	45
1951 ... ..	32	30	37	41	45

§ England and Wales : deaths per 1,000 related live births ; remainder : deaths per 1,000 live births registered in the year.

**Population.**—The combined home population of Great Britain and Ireland at mid-1951 was estimated at 53,246,000, an increase of 5 per cent over 1939. The corresponding increase for England and Wales was about 5½ per cent, for Scotland 2 per cent, for Northern Ireland 6 per cent and for the Irish Republic 1 per cent.

**Marriage Rates.**—Crude marriage rates in 1951 rose slightly compared with 1950 in all the countries except the Irish Republic. All the rates are now near the pre-war level, slightly above it in Scotland and Ireland and slightly below in England and Wales. The crude rates, however, are somewhat misleading as they are based on the total population of which only the non-married component is at risk and this component has been reduced by high marriage rates for over a decade. The detailed analysis in the Marriage Chapter of this volume shows that in fact marriage incidence is now very much higher than before the war.

**Birth Rates.**—Crude birth rates, which have been declining from their post-war peak in 1947, showed a further slight drop in 1951, the combined rate for all four countries being 16·1.

**Death Rates.**—The number of deaths in Great Britain and Ireland in 1951 rose by about 47,000 compared with 1950, an increase associated with the influenza epidemic early in the year. The crude death rate rose from 11·7 to 12·7 per thousand, and similar rises occurred in each of the four countries.

**Infant Mortality Rates.**—The death rates of infants under 1 year of age per 1,000 live births were practically unchanged in 1951 compared with 1950. The combined rate for the whole of Great Britain and Ireland was 32 in both years, compared with 55 in 1938.

# INTERNATIONAL CO-OPERATION IN POPULATION AND HEALTH STATISTICS

## The Population Commission of the United Nations

As this is the first reference to the work of the United Nations Population Commission to be included in the Review, some account is given of the period from its formation until the end of 1951; it is prefaced by notes on earlier international co-operation in population studies.

### Developments Prior to its Appointment

Like other branches of scientific knowledge which are essential to national administration and international action, demography derives considerable advantages from co-operation between nations. Unlike some other sciences, the study of population questions is perhaps more dependent on the collaboration of governments than of individuals, because, in general, governments are better able to obtain, e.g. by means of the census and the registration of births, marriages and deaths, the information needed to elucidate them.

Variations in conditions in different countries at different times enable each to make a special contribution to a common pool of knowledge from which both governments and individual research workers can derive information not obtainable merely from the resources of any one of them. But the usefulness of such material depends upon the extent to which comparison is possible. Because conditions vary and the immediate needs of governments may differ, this can only be achieved by such measure of give and take as is necessary to enable national statistics to be presented in an internationally agreed form. This was the aim of governments who sent representatives to the First Statistical Congress, which was held in Brussels in 1853.

As a result of this initiative taken in the middle of the last century, the area of comparability in population statistics gradually increased so that it was possible to take co-operation a stage further when, under the auspices of the League of Nations, an international plan of population studies was inaugurated.

It was in 1938 that the Assembly of the League of Nations authorized the appointment of a *Committee of Experts for the Study of Demographic Problems*. The Committee met in April, 1939, and decided that studies of population problems should be made under three heads, according to whether they presented themselves in countries (a) with rapidly increasing population; (b) with, or threatened with, diminishing population; and (c) with a population which was small in relation to productive area or natural resources. Although the outbreak of the war prevented the Committee from meeting again, arrangements were made for the Office of Population Research of Princeton University to continue research on behalf of the League and a series of studies was published in due course.<sup>1</sup>

The Charter of the United Nations was signed at San Francisco on the 26th June, 1945. At the end of that year the Preparatory Commission made recommendations<sup>2</sup> on a form of organization designed to enable the aims of the Charter to be fulfilled. A Demographic Commission was proposed as an advisory body to the Economic and Social Council "on matters relating to:



(a) population growth and the factors determining it ; (b) the effectiveness of policies designed to influence these factors ; (c) the bearing of population changes on economic and social conditions ; and (d) general population and migration questions.”

When this proposal was considered by the Third Committee of the First General Assembly of the United Nations, which met in London at the beginning of 1946, several delegations emphasized the importance which they attached to it. In their Report<sup>3</sup> to the Assembly at its nineteenth session,<sup>4</sup> the Third Committee expressed the hope that the Commission would be set up by the Economic and Social Council at the earliest possible date.<sup>3</sup>

### **The Terms of Reference of the Commission**

The Population Commission was established at the third session of the Economic and Social Council, held in New York in the autumn of 1946, which the Registrar General attended as a member of the United Kingdom Delegation. The resolution of the Council,<sup>5</sup> was based on a draft tabled jointly by the United Kingdom and the United States.<sup>6</sup> Briefly, it provided that the Commission should consist of one representative from each of twelve members of the United Nations selected by the Council and named in the resolution ; that representatives of certain other Commissions and of the Interim Commission of the World Health Organization could take part in its proceedings, but without a right to vote ; that the Secretary-General of United Nations should consult governments before the representatives nominated by them were confirmed by the Council, in order that the composition of the Commission would be balanced with reference to the various aspects of its work ; that, except for special arrangements made to cover the initial period, the term of office of a member of the Commission should be three years ; that the government concerned should nominate another for the residual period in cases where a representative was unable to serve for the full term of office ; and that the first task of the Commission should be to prepare for the Council's approval a programme of work which should take into account any modification in the terms of reference which the Commission might wish to recommend. The terms of reference were :

“ The Population Commission shall arrange for studies and advise the Economic and Social Council on :

- (a) Population changes, factors associated with such changes, and the policies designed to influence these factors ;
- (b) Inter-relationships of economic and social conditions and population trends ;
- (c) Migratory movements of population and factors associated with such movements ;
- (d) Any other population problems on which the principal or subsidiary organs of the United Nations or specialized agencies may seek advice.”

Following a later recommendation by the Commission,<sup>7</sup> the terms of reference were modified by the Economic and Social Council in 1948<sup>8</sup> to read as follows :

“ The Population Commission shall arrange for studies and advise the Economic and Social Council on :

- (a) The size and structure of populations and the changes therein ;
- (b) The interplay of demographic factors and economic and social factors ;
- (c) Policies designed to influence the size and structure of populations and the changes therein ;



- (d) Any other demographic questions on which either the principal or the subsidiary organs of the United Nations or the specialized agencies may seek advice."

The functions of the Population Commission in the field of migration were covered by another Resolution<sup>9</sup> which the Council passed at the same Session.

The following is the relevant paragraph of the Resolution :

" *Decides* that the Population Commission shall arrange for studies and advise the Council on the demographic aspects of migration, on the relationships between demographic, economic and social factors in migration and on the overall co-ordination of international research and study in this field by the United Nations and the specialized agencies. These studies shall cover the trends, causes and consequences of migration and shall take into account in this connexion the influence of economic and social factors, legislative and administrative measures, the social and economic conditions of migrants, and such other factors as are important determinants in or consequences of migration ;"

The appointment of the Commission was followed by the formation of a Population Division within the Social Affairs Department of the United Nations Secretariat. The Division was placed in the charge of Professor F. W. Notestein, Princeton University, with the status of Consultant-Director.

### **Countries selected to nominate Representatives, 1947-51**

The twelve countries selected to nominate representatives when the Commission was first set up were : Australia, Brazil, Canada, China, France, Netherlands, Peru, Ukrainian S.S.R., United Kingdom, United States, U.S.S.R., Yugoslavia. During the period under review, Australia and Canada ceased to be members from the end of 1949 when their places were taken by Sweden and Syria, while at the beginning of 1951 Belgium was elected in the place of the Netherlands.

### **First Six Sessions : Dates and Places of Meeting**

Up to the end of 1951 the Population Commission had held six sessions. Except for the fourth session, which was in Geneva, they were all held at the United Nations headquarters, at Lake Success, New York. The dates of meeting were : first session from the 6th to the 19th February, 1947, second from the 18th to the 27th August, 1947, third from the 10th to the 25th May, 1948, fourth from the 11th to the 21st April, 1949, fifth from the 22nd May to the 2nd June, 1950, and sixth from the 23rd April to the 4th May, 1951.

### **United Kingdom Representation**

The United Kingdom representative at the first five sessions of the Commission was Professor D. V. Glass, of the London School of Economics and Political Science. Mr. N. H. Carrier, a Statistician at the General Register Office, who attended the fourth session at Geneva in an advisory capacity, was the United Kingdom representative at the sixth session, 1951.

### **Main Features of the First Six Sessions**

The first session of the Commission was devoted to procedural matters, including relations with other Commissions and the specialized agencies, and to the formulation of instructions to the Secretariat on papers to be prepared for the second session, when a detailed programme of work was drawn up. In the Report<sup>10</sup> on this session, the Commission emphasized the importance of having a competent and adequate staff in the Secretariat to enable them to fulfil their responsibilities. The main features of the programme envisaged by the



Commission were recommendations designed to encourage comparability in the reports on population censuses, the publication of an annual Demographic Year Book, the study of population of Trust Territories, the assessment of the interplay between economic, social and demographic factors, the improvement of migration statistics and the preparation of a multilingual demographic dictionary.

On the first of these, the Commission drew up a list of subjects considered suitable for comparable treatment in *population censuses* at the second session and suggested that it should be circulated to governments for comment. After the views of governments had been considered at the third session, the Commission prepared a series of recommendations on subjects considered suitable for inclusion in a census, on the kind of information which might be obtained on each subject, and on census methods. These were followed by other recommendations, made at the fourth session, on census tabulations, on the standardization of definitions and on industrial and occupational classification. Proposals for tabulating information about urban and rural population were included in the Commission's Report on the fifth session, which also noted the publication in 1949 of two handbooks prepared by the Secretariat: *Population Census Handbook*, which was supplemented, and in part replaced by, *Population Census Methods*.

From an extensive list of topics presented by the Secretariat at the second session, the Commission selected a minimum list of contents for publication in the first issue of the *Demographic Year Book*. At the third session the Commission was informed that substantial progress had been made in the preparation of the first issue and consideration was given to additional material which had been suggested for inclusion. When it met for the fourth session early in 1949, the Commission learned that the first issue was to be published later in the year and it considered tentative proposals for special subjects to be included in the second issue.

Preliminary consideration at the second session of the kind of demographic information which it would be desirable to have for the *Trust Territories* was followed, at the third session, by the review of a provisional questionnaire for Trust Territories which had been prepared at the instance of the Trusteeship Council. Two reports on Trust Territories appeared during the period under review: one on *The Population of Western Samoa* in 1948 and another on *The Population of Tanganyika* in 1949.

Specific plans for a study by the Secretariat of the interplay between economic, social and population changes were made at the second session and at the fifth session the Secretariat's report *Findings of Studies on the Relationships between Population Trends and Economic and Social Factors* was considered by the Commission and referred back to the Secretariat for revision in the light of observations made during discussion. At the fourth session the Commission considered proposals for a field study which had reached a more definite stage when they held their fifth meeting in 1950. By that time proposals for a pilot field survey and for a study of existing data on the interplay between demographic, economic and social factors in India had reached an advanced stage.

Draft recommendations for the improvement of *migration statistics* were published in the Report of the fourth session and the comments made by governments and others on them were reviewed at the fifth. *Problems in Migration Statistics* was published in 1949 as No. 5 in the United Nations series of Population Studies.

In the Report on the third session the Commission requested the Secretary-



General to begin work on two projects proposed by the United Kingdom representative, namely, a study of *vital registration systems* (and their effectiveness) in various countries, and an analysis of the then recent *rise in the birth rate*, this latter being required for many purposes, including the construction of realistic population estimates. It was at this session that the Commission first considered the possibility of encouraging the production of a *multilingual demographic dictionary*. The aims which the Commission had in mind in suggesting the dictionary and the methods which they proposed for its preparation were set out in an annex to the Report on the fourth session.

One of the subjects put on the agenda paper for the first session of the Commission was a proposal by the United Nations Educational, Social and Cultural Organization that a world conference should be held to consider population problems. The proposal was brought forward at successive sessions, but the Commission postponed detailed consideration of it on the ground that it would be inappropriate to hold a *World Population Conference* until at least the main results of the various censuses taken in and around 1950 were available—a view which coincided with that put forward in the Commission on behalf of the United Kingdom. At the sixth session (1951) the Commission recommended that preliminary enquiries as to the scope, emphasis, size and financial implications of the proposal should be made by the Secretary-General and that he should also obtain the views of governments.

### **Increase in Membership of the Commission**

In September 1951, during its thirteenth session, the Economic and Social Council of the United Nations approved a proposal that the membership of the Commission should be increased from twelve to fifteen. This was done in order to make allowance for growth in the number of states members of United Nations since the Commission was first established, the General Assembly having resolved that as many countries as possible should be invited to take part in the work of the functional Commissions.

## **The World Health Organization**

### **WHO Centre for Classification of Diseases**

The introduction of the sixth revision of the International List of Diseases and Causes of Death, with its many changes from the previous revision, and of a form of medical certificate of cause of death which was new to many countries inevitably resulted in the posing of many problems in the use of the classification and the application of the rules for selecting the underlying cause of death. The need for some sort of clearing centre to give advice on these problems and to prevent the formulation of different national solutions to them was foreseen by the Expert Committee on Health Statistics at its first session in May 1949. The Expert Committee felt that such a body could also study other factors affecting international comparability, such as methods of collecting and recording basic data and of presenting tabulated material, and that much of this work could best be performed by an agency located at a national office of vital statistics, where the Classification and the Rules were being daily applied and where access to original records could be provided. It accordingly recommended :

“(3) That WHO set up within its Secretariat a clearing centre for problems arising in the application of the Manual, including arrangements for the use of such national skills as might be necessary to supplement those available in the WHO Secretariat.”<sup>11</sup>

The Second World Health Assembly resolved to request the Director-General to set up such a centre. The sixth session of the WHO Executive Board gave



firm support to this proposal which was further endorsed by the Third World Health Assembly in 1950. The *WHO Centre for Problems arising in the Application of the International Statistical Classification of Diseases, Injuries and Causes of Death* was set up accordingly on 1st January, 1951, and was located in the General Register Office under the direction of Dr. Percy Stocks, who retired from the post of Chief Medical Statistician of the General Register Office in order to undertake the work. The material at the Southport branch of the Office, where the analysis of death registrations is carried out, was available for research under proper safeguards and a senior executive officer of the Department, Mr. H. G. Corbett, was seconded to the Centre for full-time duty, clerical assistance being supplied from the staff of the Department.

The work of the Centre during 1951, apart from replies to requests for advice from national offices, is understood to have consisted mainly of the preparation of studies which were later published as supplements to the Bulletin of the World Health Organization. Three of these were completed during the year; one dealt with continuity between statistics based on the fifth and on the sixth revisions and used the England and Wales death registration of 1950, which had been coded at the General Register Office according to both lists; another listed a number of decisions and interpretations of the Classification which had been formulated after consultation with national offices in a number of countries and was issued as Addendum 1 to the Classification; the third was a booklet "intended to assist physicians and surgeons in understanding the concepts involved and to guide them in writing death certificates." A fourth, dealing with amplification of death certification by means of enquiries to certifying practitioners, was commenced during the year. In addition to these studies, the Centre prepared documents for the WHO Conference on Morbidity Statistics, held in November, and for a Coders' Training Course for the European Region, held in Geneva in June, compared and commented on the assignments made by the national offices of Canada, England and Wales and the United States of America on about 900 "problem" certificates selected from Canadian experience, and commenced a study of the use in England and Wales of the International Form of Medical Certificate of Cause of Death.

### **The Expert Committee on Health Statistics**

The third session of the Expert Committee was held in Geneva from the 21st to the 29th November, 1951, in two parts, of which the first took the form of a Conference on Morbidity Statistics and the second dealt with more general matters, including a report from a Sub-Committee on Cancer to which reference is made below.

At the *Conference on Morbidity Statistics*, Professor Lowell J. Reed, then Vice-President (now President) of the Johns Hopkins University, Baltimore, U.S.A., was in the Chair and Dr. W. P. D. Logan, Chief Medical Statistician at the General Register Office, was rapporteur. In addition to members of the Expert Committee, the Conference was attended by a number of specialists, and Dr. D. Mackay, General Register Office, was present as a statistical consultant with reference particularly to hospital statistics.

The Conference reviewed the wide range of morbidity statistics already found in countries where they had been developed and considered their scope and uses. Detailed attention was given to the various kinds of sickness statistics, to the extent to which it was possible for countries in different stages of development to compile and use them and to the sources of material which would provide indicators of the general level of health and of the hazards peculiar to professional, industrial and other groups of the population. Recommendations were made on methods of registration and on follow-up procedure, on the definition of terms and on the measurements used in morbidity statistics. Emphasis was



laid on the role of National Committees on Vital and Health Statistics, or their equivalents, in promoting comparability in morbidity statistics. It was recommended that a Conference of National Committees should be convened by WHO in 1953 to consider among other things :

- “(a) morbidity definitions of a general nature, definitions of hospital terminology and definitions of various rates of morbidity.
- (b) Adaptations and selected lists from the International Statistical Classification of Diseases, Injuries and Causes of Death.”

The Conference also made various recommendations regarding the World Health Organization's responsibilities in the field of morbidity statistics.

The *second part* of the third session of the Committee was held from 27th to 29th November, with Dr. P. F. Denoix of the Institut National d'Hygiène, Paris, in the Chair and Dr. W. P. D. Logan of the General Register Office as Vice-Chairman. The report of the Cancer Sub-Committee was adopted with minor amendments. A report was made on the first year's work of the *WHO Centre for Problems arising in the Application of the International Statistical Classification of Diseases, Injuries and Causes of Death*. The Committee expressed its satisfaction at the Centre's work and recommended that it should be maintained as a regular and continuing activity. Various recommendations were made regarding future revisions of the International Statistical Classification, including a proposal that the revision should take place in the middle rather than at the end of a decennium in order to allow time for the revised list to be brought into use for the compilation of medical statistics required for occupational mortality and other special studies made in connexion with the population census which is usually taken in years ending with 0 or 1.

The proposed adaptation of the International Statistical Classification for the use of the armed forces, the need for a code of surgical, radiological and anaesthetic procedures, and the establishment of a list selected from the Classification for statistics of the mortality of young children were also discussed.

A recommendation made by the United Nations Population Commission that the United Nations should co-operate with the World Health Organization on the subject of the refinement of infant mortality rates was referred to the Expert Committee, which recommended that the Organization should study, from the medical point of view, the methods suggested by the Population Commission and should collect, study and report on published papers and other material relating to methods of refining infant mortality rates.

The Committee reviewed the progress which had been made in the setting up of national committees on vital and health statistics throughout the world and, in view of their growth and diverse development, recommended that the proposed international conference of these committees in 1953 should review the objectives, organizational patterns, programmes and working relationships of national committees with each other and with international agencies.

### **The Sub-Committee on the Registration of Cases of Cancer as well as their Statistical Presentation**

The Sub-Committee held its second session in Paris from the 18th to the 21st September, 1951 under the Chairmanship of Dr. J. Clemmesen, head of the Cancer Registry, Copenhagen. The Sub-Committee discussed the first general principles governing the statistical classification of neoplasms, agreed that such classification should distinguish the anatomical site, the histological type, and the degree of malignancy, and decided that, to make coding easy, a separate



classification was required for each of these three aspects. When considering classification according to histological type, the Sub-Committee reviewed the *Manual of Tumour Nomenclature and Coding* which had just been published in the U.S.A. by the American Cancer Society. It was recommended that the Manual, or some modification of it, should be tried out in different countries with a view to making their experience available to WHO when the preparation of a standard classification of neoplasms by histological type and degree of malignancy was undertaken. The question of cancer registration was also considered and the Sub-Committee was informed of progress already made in England and Wales and other countries, as well as of plans for similar schemes in other parts of the world.

## **Executive Board**

The seventh and eighth sessions of the WHO Executive Board were held in Geneva in 1951. At the seventh session, which took place from the 22nd January to 5th February, the Board noted that the Director-General had been maintaining contact with governments and with non-governmental organizations on the subject of the establishment of WHO national committees and that he would "report to a future session on the results of his enquiries."<sup>12</sup> National committees there referred to include committees which would deal with health matters other than vital and health statistics. The part that WHO should take in studying population problems, both in collaboration with the Population Commission and on its own, was discussed when the Board held its eighth session from the 1st to 8th June; a resolution was adopted requesting the Director-General to study the health aspects of the question, to report on the relative spheres of the Population Commission and WHO in this field<sup>13</sup> and to include the question on the agenda of the ninth session of the Board.

## **Fourth World Health Assembly**

The Registrar General and Mr. A. E. Joll and Dr. W. P. D. Logan of the General Register Office attended for various parts of the Fourth World Health Assembly, which was held in Geneva from the 7th to 25th May, 1951. The United Kingdom delegation submitted a paper with reference to the statement, made in the health statistics section of the programme for the year 1952, that "the first objective of the Organization is to help national health administrations improve their health statistics." The United Kingdom delegation proposed that a further declared aim should be for the Organization itself to build up, at headquarters, a body of sound statistical and other information by which its policy could be guided and progress measured. The delegation moved the adoption of a draft resolution which was supported by the United States and approved, after slight modification, by the Committee on Programme. It was subsequently adopted by the Assembly (Resolution WHA4.3) as follows :

### **HEALTH STATISTICS**

#### **The Fourth World Health Assembly**

RESOLVES that, in future, general statements on the programme of the Organization should recognize, without prejudice to other objectives, that a main aim of the Organization should be :

(1) To build up gradually at headquarters a body of sound statistical information and advice, covering all parts of the world, by which the policy of the Organization, including the regions, can be guided and its operations and their results measured, and

(2) to encourage the various branches and regions of the Organization to make the fullest use of the statistical data and facilities so made available at headquarters.

### Conference of British Commonwealth Statisticians, 1951

The Conference of British Commonwealth Statisticians, held in Canberra from the 12th to 23rd November, 1951, was the third meeting of its kind. The first Conference met in London in 1920 and the second at Ottawa in 1935. Mr. W. J. Littlewood, of the General Register Office, was a member of the United Kingdom delegation

The Conference decided not to follow the precedent of adopting a series of formal resolutions, but instead to exchange views on statistical aims and methods. The General Register Office was particularly interested in the discussion on recent developments in census taking which included reference to the 1 per cent sample taken from census schedules in Great Britain in 1951. A paper on the occupational classification of labour force statistics, prepared by the General Register Office in collaboration with the Ministry of Labour and National Service, was the basis of a very full discussion in plenary session.

### Visitors from Overseas

In the course of the year 1951 a number of visitors from abroad, including the Commonwealth and colonial territories, were shown something of the work of the General Register Office. Among the foreign countries represented were the United States of America, Belgium, Chile, Greece, Italy, Japan, Mexico, Norway; there were also visitors from the Gold Coast, Sierra Leone and the West Indies. Some of these were students pursuing courses in population subjects as United Nations or WHO Fellows. Members of the United Nations Secretariat also visited the Office. Demonstrations, instruction and explanation were arranged to suit the needs and interests of each visitor. In several cases the tour of study included the Department's Southport branches as well as its London offices. These visits foster technical improvements, not least in the less developed countries, and also lead to continuous international liaison in the demographic field which is of mutual value to the General Register Office and to the individuals and institutions in other countries with which contact is maintained.

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2. *Report of the Preparatory Commission of the United Nations*, Chap. III, section 4, paragraph 32. London, 1946.
3. *United Nations. Official Records of the First Part of the First Session of the General Assembly*. Verbatim Record, 10th January-14th February, 1946, Annex 3, page 573.
4. *Ibid.*, page 303.
5. *Resolutions adopted by the Economic and Social Council during its Third Session from 11th September to 10th December, 1946*, 3 (III).
6. United Nations Document E/190.
7. *Economic and Social Council Official Records, Third Year, Seventh Session, Supplement No. 7. Report of the Population Commission on its Third Session*.



8. *Resolutions adopted by the Economic and Social Council during its Seventh Session from 19th July to 29th August, 1948*, 150 (VII).
9. *Ibid.*, 156 (VII), paragraph 7.
10. *Economic and Social Council Official Records, Second Year, First Session, Supplement No. 5. Report of the Population Commission*, paragraph 41.
11. *World Health Organization, Technical Report Series*, 1950, 5, 5.
12. *Official Records of the World Health Organization*, No. 32, page 17.
13. *Official Records of the World Health Organization*, No. 36, page 19.

## Membership of the Population Commission, Sixth Session

### *Representatives of Member States*

Belgium : J. E. Mertens.  
 Brazil : G. Jardim. (Vice-Chairman).  
 China : H. Cha (alternate representative).  
 France : A. Sauvy. (Chairman).  
 Peru : J. A. Encinas P.  
 Sweden : C. E. Quensel.  
 Syria : N. Rifai.  
 Ukrainian Soviet Socialist Republic : V. A. Rabichko.  
 Union of Soviet Socialist Republics : T. V. Ryabushkin.  
 United Kingdom of Great Britain and Northern Ireland : N. H. Carrier.  
 United States of America : P. M. Hauser. (Rapporteur).  
 Yugoslavia : D. Vogelnik.

### *Representatives of Specialized Agencies*

International Labour Organization : A. A. P. Dawson.  
 United Nations Educational, Scientific and Cultural Organization : Mrs. A. Myrdal, M. S. V. Arnaldo.  
 World Health Organization : M. Pascua.

### *Observers*

International Confederation of Free Trade Unions : John Brophy.  
 Catholic International Union for Social Service : Mrs. Grace V. Aieta, Mrs. Allys D. Vergara.  
 International Union of Catholic Women's Leagues : Mrs. Catherine Schaefer.  
 International Union for the Scientific Study of Population : F. Lorimer.  
 International Association of Penal Law and International Bureau for the Unification of Penal Law : Sabin Manuila.

### *Representatives of the Assistant Secretary-General*

P. K. Whelpton, Director of the Population Division.  
 John D. Durand, Assistant Director of the Population Division.

### *Secretary*

George Sotirov.

## WHO Expert Committee on Health Statistics (Third Session)

### Part I Conference on Morbidity Statistics

#### *Participants*

Professor R. Bachi, Director, Central Bureau of Statistics and Economic Research, Jerusalem, Israel (Vice-Chairman).

Professor F. A. E. Crew, University of Edinburgh, Edinburgh, United Kingdom.

Dr. P. F. Denoix, Chef des Services Techniques et de la Section du Cancer, Institut National d'Hygiène, Paris, France.

Dr. H. F. Dorn, Chief, Biometrics Section, National Cancer Institute, National Institutes of Health (U.S. Public Health Service), Bethesda, Md., U.S.A.

Dr. H. L. Dunn, Chief, National Office of Vital Statistics (U.S. Public Health Service), Washington, D.C., U.S.A.

F. Fraser Harris, Director, Health and Welfare Division, Dominion Bureau of Statistics, Ottawa, Canada.

Professor R. B. Lal, Acting Director, All-India Institute of Hygiene and Public Health, Calcutta, India.

Dr. W. P. D. Logan, Chief Statistician (Medical), General Register Office, London, United Kingdom (Rapporteur).

Dr. M. G. Neurdenburg, Medical Inspector, Amsterdam, Netherlands.

Professor L. J. Reed, Vice-President, Johns Hopkins University, Baltimore, Md., U.S.A. (Chairman).

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#### *Observers*

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L. Feraud, Actuarial Adviser, I.L.O.

Dr. B. Pirc, Head, Department of Health Statistics, Committee of Public Health Protection, Belgrade, Yugoslavia.

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Dr. Marie Cakrtova, Chief, International Statistical Classification of Diseases and Causes of Death Section, WHO.

Dr. M. Pizzi, Chief, Morbidity Statistics Section, WHO.

Dr. P. Stocks, Chief, WHO Centre for the Classification of Diseases, General Register Office, Southport, Lancs., United Kingdom.



## **Part II General Problems of Health Statistics**

### *Members*

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## **Sub-Committee on the Registration of Cases of Cancer as well as their Statistical Presentation**

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Dr. J. Clemmesen, Chief, Cancer Registry, Copenhagen, Denmark (Chairman).

Dr. P. F. Denoix, Chef des Services Techniques et de la Section du Cancer, Institut National d'Hygiène, Paris, France.

Dr. H. F. Dorn, Chief, Biometrics Section, National Cancer Institute, National Institutes of Health (U.S. Public Health Service), Bethesda, Md., U.S.A. (Rapporteur).

### *Secretariat*

Dr. M. Pascua, Director, Division of Health Statistics, WHO (Secretary).

Dr. P. Stocks, Chief, WHO Centre for the Classification of Diseases, General Register Office, Southport, Lancs., United Kingdom.

# THE REGISTRATION SERVICE

## Local Organization

A brief account of the local organization of the registration service was given in the Statistical Review, Civil Text Volume, 1946-1950, page 157. The number of fee-paid officers continued to decline during 1951 owing to retirements of officers and their replacement by salaried officers. The number of posts in the service at the end of 1951 is shown in the following table.

### Registration Posts

	Salaried Posts	Posts held by fee-paid officers	Total
Superintendent Registrars ... ..	497	29	526
Registrars of Births and Deaths ... ..	1,197	28	1,225
Additional Registrars ... ..	166	—	166
Registrars of Marriages ... ..	—	69	69
Total ... ..	1,860	126	1,986

The process of centralizing offices in any registration district where it could be done with advantage to the public continued during 1951 with the result that at the end of the year registrars of births and deaths in England and Wales occupied just under 1,000 offices. In addition there were about 1,700 "out-stations," i.e. addresses at which they attended at frequencies ranging from about twice a week to twice a month to register births and deaths. In about 230 districts the office of the superintendent registrar was housed in the same building as one or more of the registrars of births and deaths for the district.

## Searches and Certificates

Table CXXXIII shows the extent to which the records in the General Register Office have been used since 1866.

Table CXXXIII

Year*	Total Searches	Searches for Govt. Depts.	Searches paid for by the public	Certificates issued	Amount Received
1866	12,135	—	12,135	10,017	£ 1,860 s. 15 d. 6
1875	26,356	—	26,356	20,282	3,879 15 6
1885	36,450	—	36,450	27,682	5,317 13 6
1895	53,289	—	53,289	35,727	7,200 12 6
1905	65,142	—	65,142	50,310	9,611 9 0
1915	202,939	118,788	84,151	69,746	13,007 10 0
1925†	488,781	339,790	148,991	115,378	25,610 2 6
1935	591,056	443,783	147,273	119,351	26,221 9 6
1945	569,266	380,730	188,536	187,077	39,474 14 3
1946	826,380	544,843	281,537	271,208	56,676 8 9
1947	1,180,519	873,868	306,651	299,525	61,900 15 6
1948†	943,705	658,251	285,454	350,626	56,954 15 9
1949	793,386	527,814	265,572	310,723	52,728 3 6
1950	732,511	486,386	246,125	285,487	51,215 17 8
1951	809,702	555,067	254,635	312,595	52,966 8 0

\* These periods relate to 52 weeks except those marked † which relate to 53 weeks.



Table CXXXIV gives an indication of the scope of searches undertaken on behalf of Government Departments since 1946.

Table CXXXIV

Year*	1946	1947	1948†	1949	1950	1951
Contributory Pensions and National Insurance ...	301,937	415,294	411,897	264,344	300,050	354,952
Benefits :						
Family Allowances ...	78,987	362,846	170,204	182,308	127,013	147,743
Non-contributory Pensions ...	58,321	46,863	38,250	23,917	22,430	13,210
Ministry of Pensions...	94,350	39,010	27,028	25,456	20,593	19,748
Navy, Army and Air Force ...	11,248	9,855	8,872	10,932	7,612	12,339
Others ...	—	—	2,000	20,857	8,688	7,075
Total ...	544,843	873,868	658,251	527,814	486,386	555,067

Table CXXXV shows the numbers of birth and adoption certificates issued from the General Register Office since 1946 and includes the numbers of the short certificate introduced in 1947.

Table CXXXV

Year*	Birth Certificates			Adoption Certificates			Adoptions Registered
	Standard	Short	Total	Standard	Short	Total	
1946	195,163	—	195,163	22,000	—	22,000	21,280
1947	211,000	1,060	212,060	18,600	1,150	19,750	18,269
1948†	176,631	62,662	239,293	13,112	32,331	45,443	18,550
1949	158,510	59,167	217,677	13,464	20,370	33,834	17,331
1950	143,135	55,307	198,442	10,102	15,824	25,926	12,748
1951	153,935	67,697	221,632	10,080	15,688	25,768	13,854

Adoption of Children

During 1951 entries relating to the adoptions of 13,854 children were made in the Adopted Children Register maintained by the Registrar General under the Adoption Act, 1950. An analysis of adoptions recorded since 1927 is given in Table T3 of the Statistical Review for 1951, Tables Part II, Civil.

Re-registration of Births under the Legitimacy Act, 1926

During 1951 the births of 2,596 legitimated persons were re-registered. The numbers of births re-registered since 1927 when the Legitimacy Act, 1926, came into operation are given in Table T2 of Part II for 1951.

Registration of Births, Deaths and Marriages Abroad

An account of the various arrangements for registration of births, deaths and marriages of British subjects, including members of H.M. Forces, abroad, and for the registration of births and deaths at sea and in the air was given in the 1946–1950 Civil Text, pages 164–166.

\* These periods relate to 52 weeks except those marked † which relate to 53 weeks.

The numbers of events abroad recorded during 1951 are shown in the following table.

Form of Record	Births	Deaths	Marriages
Consular Records ... ..	4,026	817	533
Army and Air Force Registers ... ..	4,822	1,045	1,430
Records of U.K. High Commissioners in India and Pakistan ... ..	822	51	—
Foreign Marriages registered at the General Register Office ... ..	—	—	16*
Certificates of Marriages according to Local Law overseas deposited at the General Register Office ... ..	—	—	115
Marine Register ... ..	177	975	—
Air Register ... ..	—	{ 1 death 1 missing person	—

\* Includes 2 marriages which took place before 1st Feb., 1948.

### Offences against the Registration Acts

During 1951 two persons were prosecuted and convicted for failing to register a birth, and one person for giving false information for insertion in a birth register and forging a birth certificate. In four cases proceedings were instituted under the Perjury Act, 1911, against persons making false declarations for the purpose of procuring a marriage, and convictions were obtained in each case.



## NATIONAL REGISTRATION

During its last full year the National Register remained closely linked with the food rationing system. The National Registration Officer was also the Food Executive Officer and the joint National Registration and Food Offices continued in being. This arrangement was convenient for the public and saved duplication of work and records.

The Register continued to assist the Ministry of Labour and National Service in securing the registration of men under the National Service Acts. This resulted, for 1951, in 5,250 men who had failed to register being traced and required to fulfil their obligations.

Reference was made in the previous Review (Text, Civil, 1946-50) to the assistance which the Register was able to give to the new National Health Service, to the Social Survey Division of the Central Office of Information, to Associations concerned with the welfare of the Services and their families, and to British subjects living abroad. These various services continued in 1951. Verification of dates of birth for the purposes of Family Allowances and Post-war Credits continued to be made from the Register, and persons to whom benefits of some kind were due from various Government Departments were traced.

The Central Index of Service Voters was maintained at the Central National Registration Office. During the year 1951, 149,746 declarations of Service Voters under the Representation of the People Act, 1949, were received while in the same period 143,171 names were removed from the Index.

### Further Uses in 1951

In 1951, use was made of the National Registration records for the purpose of checking inflation in doctors' lists of patients. The National Health Service had adopted the National Registration number for the purpose of its records and this number was copied on to those index cards held by the N.H.S. Executive Councils where it did not already appear. Obsolete and duplicate entries revealed as a result of this procedure were removed from the N.H.S. records and the registrations with doctors in these cases amended accordingly.

In April, 1951, the Central Index of the National Register began to operate also as the Central Register for the National Health Service. This was a necessary part of the procedure for effecting the clearance of doctors' lists referred to above and also for preventing a recurrence of inflation. During the year under review over 20,000,000 postings of persons already registered with doctors were made and about 200,000 cancellations were notified to Executive Councils. From April particulars of registrations with doctors were received from Executive Councils who in turn were notified of all exits by removal to another area, death, embarkation or enlistment in H.M. Forces. During the nine months of its operation the Central Register was notified of 839,000 new acceptances and 822,500 transfers between Executive Councils.

The National Register contained a precise record of movement of population between administrative areas. Particulars of removals to and from each administrative area in the years 1948 to 1950 inclusive were extracted from

National Registration records and a detailed analysis was made by sex and age of the persons migrating and the distance of their migration for 27 selected areas. The preliminary results, together with a commentary on the value and limitations of the information, were published in 1951 in "Studies on Medical and Population Subjects No. 5—Internal Migration—Some aspects of population movements within England and Wales, by Mary P. Newton, M.A., and James R. Jeffery" (London, H.M.S.O., 1s. 6d.).

Migration statistics obtained from National Registration records also appear in "Studies on Medical and Population Subjects No. 6—External Migration—A study of the available statistics, 1815–1950, by N. H. Carrier, M.A., and J. R. Jeffery" published in 1953 (London, H.M.S.O., 8s. 6d.).

**Procedural Changes**

Further changes which were made in procedure for the convenience of the public included allowing callers to notify changes of address to, and effect registration with, *any* local National Registration Officer. This enabled a removal notice or application for new registration to be accepted in an area other than that of the person's residence, the notice or application being sent on to the National Registration Office concerned and the identity card despatched to the person by post.

The period of exemption from National Registration for visitors to the United Kingdom was extended to 91 days ; and a special office for the convenience of overseas visitors was opened in London.

**Enforcement**

Table CXXXVI shows the numbers of persons convicted of offences under the National Registration Act since 1944, the last full year of war. The figures for 1951 show a further diminution in the number of convictions.

**Table CXXXVI.—Persons convicted of Offences under the National Registration Act, 1939**

	1944	1945	1946	1947	1948	1949	1950	1951
Making false statements for National Registration purposes ... ..	189	120	50	87	121	81	15	8
Using an identity card for purposes of impersonation ... ..	483	462	213	179	143	111	53	30
Allowing another person to use one's identity card ... ..	82	63	34	17	19	20	13	7
Forgery of an identity card ...	126	103	97	71	79	77	22	6
Defacement or destruction of an identity card ... ..	166	93	35	32	23	20	20	11
Failure to produce identity card to Police ... ..	1,573	706	211	269	252	186	122	89
Failure to notify change of address...	527	474	261	173	80	30	24	10
Other offences against National Registration Regulations ...	1,527	532	722	562	150	92	93	104
Total ... ..	4,673	2,553	1,623	1,390	867	617	362	265



## Statistics of New and Cancelled Registrations

During 1951 over 1 million new registrations were made in the National Register (660,000 of new-born children and the remainder on entry to the country or release from the Services), bringing the total of new registrations made since the initial establishment of the Register to over 17 million.

Over 1 million entries in the Register were closed during the year, 540,000 by death, 270,000 by embarkation for abroad and the remainder on entry into the Services. This brought the total exits recorded since the commencement of National Registration to 14 million.

## Movement of the Population

Recorded removals from one administrative area to another in 1951 were well over 3 million and the total since September, 1939, was 59 million by the end of 1951. Records kept in 1951 showed that the number of removals recorded within administrative areas during that year was 2,870,000.

## The end of National Registration

Although the National Register remained in being until 21st February, 1952, it is convenient to deal in this Review with its final phase. On that date the Government's decision to discontinue National Registration was announced in the House of Commons by the Minister of Health in answer to a question whether he would discontinue the use of identity cards. The Minister's reply was : " Yes, Sir. Her Majesty's Government have decided that it is no longer necessary to require the public to possess and produce an identity card, or to notify change of address for National Registration purposes, though the numbers will continue to be used in connection with the National Health Service. I will, with permission, circulate in the OFFICIAL REPORT more details of this decision—as they are a little long—and people should await those details before disposing of their cards." Thus came to an end a system which had closely affected all citizens of the United Kingdom, young or old, during nearly six years of war and for more than six years afterwards.

It seems appropriate in retrospect to attempt some evaluation here of this universal Register which was the creature of wars and was probably unique throughout the world in its comprehensive character and its system of continuous maintenance.

Experience gained earlier from the operation of the National Health Insurance (medical benefit) registration of 1912 and the National Registration Scheme of 1915 proved of great value to the Registrar General (Sir Sylvanus Vivian) in planning for the Register for World War II. The sustained executive preparations which were made during the uneasy period following Munich enabled a comprehensive National Registration system to be available immediately after the outbreak of war in September, 1939.

The initial register was set up by a house to house enumeration on the lines of a Census and the issue on the spot to every civilian of an identity card with a unique number linking him with the record obtained from the enumeration. A central record prepared by the enumerator in book form and in identity number order was set up at Southport (details of the method of compiling the Register were given in the Registrar General's Statistical Review of England and Wales, 1940-45 : Text, Vol. II, Civil). Thus in a little more than a month from the outbreak of war a local record of residents and their addresses was available, and also a central record to act as a clearing house. National Registration Headquarters in London at Somerset House maintained a general control of the machine at Southport and in local offices and co-ordinated the requirements of the several Departments using it.



Provision for notification of removals, deaths, enlistments into H.M. Forces and embarkations on the one hand, and births, discharges from H.M. Forces and entrants to the United Kingdom on the other enabled the Register to function as a "live" and up-to-date record of all civilians in the country.

Almost immediately after its establishment the first large demand was made upon the Register. Its local records were used as the basis for the issue of the first food ration books (over 40,000,000 documents) in October and November, 1939.

It had long been foreseen that a legal sanction alone would probably be insufficient to ensure the full and smooth discharge of the obligation on individuals to notify changes of address, and that support of some kind was advisable if not essential. The reliance placed on food rationing for the purpose of keeping the Register fully alive was amply justified by the results obtained, and the indebtedness of the Department to the full and free co-operation of the Ministry of Food throughout in enabling the utmost benefit to be obtained from this sanction is gladly acknowledged. The Ministry of Food for their part found that the requirement to produce an identity card with a person's old ration book provided both a safeguard against duplicate issues at the annual issue of new ration books and also a simple and effective basis for this big annual task. The identity card became the voucher for the new ration book. The eventual establishment in 1943 of joint local National Registration and Food Offices in the same premises and the considerable integration of their respective functions in matters of common interest also benefited both systems. It was, too, of great benefit to the public who were able to transact the business of food and national registration at one point. The food sanction was still operative in the last full year of the National Register, when 6,000,000 removals were notified.

The Register was planned not only to be ready to function in the very early days of the war but to supply indefinitely the multifarious needs—mostly unknown—of a national emergency. The National Registration Act, 1939, in fact made no express provision whatever for any services to be rendered by the Register, but the Bill and the plans were sufficiently widely drawn and the Register met all the demands made upon it though many of them were wholly unforeseen. These included the duty of administering Defence Regulation 20 relating to change of name and the creation in war-time of a complete electoral register kept continuously up-to-date.

It was its dual features of universality and continuous maintenance which enabled the National Register to be used for the purpose of electoral registration, a large and complicated undertaking involving the compilation of entirely new electors' lists containing over 29,000,000 names. This was the most onerous of all the tasks imposed upon the National Register. The electoral register previously in use could not be adapted to meet a movement of population such as war conditions created. Some adjustment of National Registration machinery was necessary to cope with the new obligation, particularly in regard to absences from the United Kingdom, but this in itself strengthened the National Register. Codes denoting age were included in the particulars inserted on identity cards to distinguish easily persons qualified for inclusion in the electoral register; and the endorsement on their identity cards enabled aliens to be excluded from the register. The electoral register thus built up from National Registration sources in 1944 was kept up-to-date, by means of continuous notification from the National Register to Electoral Registration Officers of removals, exits, new entrants and attainments of majority, until mid-1948. (The Government then decided to revert to the canvassing machinery in use before the war.)



Another important service in war-time and thereafter consisted of recording in the Register those persons who had reported for service under the National Service Acts and the Employment Orders and notifying the Ministry of Labour and National Service of those who had failed to report and of their current addresses.

Mention should also be made here of the use of the National Register for the National Health Service from the inception of the latter in 1948. The Government decided in 1952 that to save the labour and expense of allotting separate numbers when National Registration came to an end, the series hitherto used for both National Registration and the National Health Service would continue to be used for the latter. The National Registration number has therefore now become the National Health Service number and the Central Index has been suitably adapted for use as the Central Register for the National Health Service.

Apart from these large-scale national operations the Register was used also in individual cases for the benefit of the person concerned or where national security or serious crime was involved. For example, information obtained from the National Register enabled the police to identify, trace and very speedily arrest a murderer. As the potentialities of the Register came to be realized more fully by Government Departments, local authorities and others, applications for help in many directions were continually received and the Register was eventually used in providing information of various kinds, with proper safeguards where necessary, for more than 100 different projects. The last extension of its uses was in December 1951, viz. notification to the National Assistance Board of deaths of blind non-contributory pensioners.

Some further examples of the variety of purposes served are given below :

National Assistance Board : endorsement of identity cards, when payment made to air raid victims, to prevent unwarranted claims.

Board of Trade : by obtaining N.R. particulars of purchasers fraudulent and duplicate applications under the Utility Furniture scheme and other abuses were detected.

British Empire Cancer Campaign : follow-up of former hospital patients was facilitated by availability of current address.

Central Office of Information : selection from local registers of samples of population for interview for various Social Survey purposes.

Treasury Solicitor : tracing of next-of-kin to whom payments due.

Post Office Savings Bank : production of identity card in "on demand" withdrawal cases to prevent fraud ; this new safeguard simplified the procedure for withdrawals on demand without undue risk.

Commonwealth Gift Scheme : speedily identifying addresses of children born on Prince Charles's birthday.

Insurance Companies : tracing individuals to whom matured policy payments were due.

Passport and Permit Office : issue of passports made simpler and safeguards provided.

National Insurance : verifications of ages on claims for Family Allowances.

Ministry of Labour and National Service : residence on identity card accepted for lodging allowance claims.

Lost Property Offices : identity card provided means of restoring property, e.g. handbags or wallets, lost in buses, etc.

Salvation Army : tracing missing relatives.

War Office : tracing next-of-kin of Army personnel.

British Red Cross : tracing relatives and friends of persons in enemy occupied territory.

Royal Commission on Population : for present address of 10 per cent sample of married women for Sample Family Census.

Home Office : notification of deaths of aliens.

Ministry of Pensions : notification of deaths of pensioners holding expensive appliances such as wheeled chairs or cars.

Ministry of Town and Country Planning: incidence of migration between 1948 and 1950.

General Register Office : 1947 count of local populations by sex and age (last done in 1939). Measurements of movement of population for local area estimates.

Social Medicine Research Unit : notification of deaths of infants.

Billeting Officers: notification of removals.

Inland Revenue : verifying ages on claims for Post-war Credits.

The contribution which the Register was able to make in such a variety of ways was due to three main factors, viz. its universality, its system of continuous maintenance and its link, centrally and locally, with every individual through his unique identity number on the identity card issued to him.

An important and increasingly valuable feature was the allocation to every child born in the country of a personal number linked permanently to the particulars given on registration of birth. When the Register ended a number so derived and linked was held by 20 per cent of the population. This method of numbering children is being continued in the National Health Service.

The preceding paragraphs deal primarily with uses actually made of the Register. As against that, there were many occasions when use of the Register was denied to individuals or organizations including local authorities and government departments. The general line followed as regards new uses was that facilities were not given unless the purpose was in the interests of the individual registered and not to his detriment. Thus, information from the Register was refused in cases such as pursuit of debtors, follow-up of maintenance orders, claims for possession of houses. Applications took various forms, mainly for information as to the current address or as to the address or area of residence at a given date. If a national registration officer was subpoenaed in civil proceedings to produce the information, counsel were if necessary instructed to appear on behalf of the Registrar General and make a submission to the effect that the information should not be given and that to do so would constitute an offence under Section 8 (2) of the Act of 1939. Such submissions were invariably upheld by the courts whenever the proceedings reached that point. This issue was argued at some length in a divorce case (*Everitt v. Everitt*) in the Court of Appeal in June 1948. In that case counsel concerned decided, after the adjournment, not to press further for the information. The learned President then observed that, although the Court was not now obliged to decide the point, counsel for the Registrar General was quite justified in putting forward his argument which on the face of it appeared to be well-



founded ; he added “ we want to make it quite clear that we are treating it quite seriously although not now called upon to decide the point.” (Reference was also made in this case to a similar section in the Agricultural Marketing Act, 1931, and to the case *Rowell v. Pratt* in the House of Lords in 1939.)

The retention after the war of the liability to produce an identity card to a police officer, which led to much criticism, was not occasioned by any needs of the Register itself.

For each of the two major wars of this century a national register was found to be necessary. The Register of 1915 was conceived for the very limited purposes of recruiting and national service functions and to meet what was considered to be a short-lived emergency. It originally included only persons who, at the time of the enumeration in 1915, were between the ages of 15 and 65. In 1918 it was extended to males who had become 15 or been discharged from the Forces since the enumeration. Its two principal defects were thus remedied (though at a late stage) but others remained, such as the lack of provision for the removal from the register of persons who died or left the United Kingdom. The Register of 1939 was, however, more broadly based and capable of serving any general Departmental demand which might arise. It was indeed part of the Government plans for the purpose of properly mobilizing the whole of the nation’s manpower in the event of an emergency ; from the outset it also provided a basis for food rationing. It was a comprehensive National Register obtained by a national stock-taking on one day, through which an identity card was issued to every individual on the spot and a running account was kept of him from then on.

While it was in being the National Register was naturally, as a matter of economy and all-round convenience, put to various administrative uses which had little or nothing to do with the main war purposes for which it was primarily needed. Thus it served for a time in the post-war period in particular, when various social services were being built up or extended for the benefit of the whole population, to reduce the number of occasions on which it was necessary to obtain the same (or much the same) basic information from the individual citizen. It was used, too, for statistical purposes. It was not to be expected that its discontinuance would be unaccompanied by incidental inconvenience to the citizen or of an administrative kind. An example of the latter is that the information available to the General Register Office for framing local population estimates is now less than it was. There is no longer a continuous record of inter-area movement and the migration element in the calculations has to be derived from study of other sources such as the Electoral Register, housing and education returns and, until the end of rationing, ration book figures. For analogous reasons it has also become more difficult to control inflation of doctors’ lists through the National Health Service Central Register.

For the record, and to show the scale on which it operated, a list is given below of the main items recorded in the National Register, and the main types of notifications from it, during the whole period of its existence :

1. Notification of removals :		
(a) External, i.e. from one administrative area to another .. .. .	..	60,000,000
(b) Internal, i.e. within administrative areas ..	..	50,000,000
2. New registrations, i.e. births, new entrants from abroad, discharges from H.M. Forces (including demobilizations) and Mercantile Marine ..		
	..	17,500,000
3. Replacement of lost or destroyed identity cards ..	..	5,200,000

4. Changes of name, including change of name on marriage .. .. .	5,300,000
5. Exit notifications, i.e. deaths, enlistments in H.M. Forces and Mercantile Marine, and embarkations	14,250,000
6. Recording registrations for employment and national service .. .. .	21,500,000
7. Notifications of failure to register for employment and national service .. .. .	2,275,000
8. Posting " Z " class reservists .. .. .	2,650,000
9. Recording applications and issuing green photo-bearing identity cards .. .. .	350,000
10. Recording holders of special appliances issued by Ministry of Pensions and notifying deaths ..	48,000
11. Recording Cancer cases and notifying deaths and removals .. .. .	116,000
12. Recording Blind Pensioners and notifying National Assistance Board of deaths .. .. .	10,000
	<hr/>
	179,199,000

In addition to the recordings made in the National Register, the following notifications were also made from it :—

13. Notifying change of address, death, or emigration of reservists .. .. .	1,700,000
14. Family allowance verifications of date of birth ..	1,300,000
15. Notification to Ministry of National Insurance of latest address of persons to whom National Insurance contributions statements could not otherwise have been delivered .. .. .	750,000
16. Verifying date of birth of Post-war Credit claimants	354,000
17. Notifying Medical Research Unit of deaths of children under 1 year of age .. .. .	58,000
18. General address enquiries from Government Departments and others .. .. .	100,000
	<hr/>
Grand Total .. .. .	183,461,000

It will be seen from the above that during the 12½ years it was in use 110,000,000 removals were recorded in the National Register, this constituting the most important single maintenance element in a total of over 150,000,000 maintenance entries. There were periods in which the movement of the population was without precedent in the history of this country, the first during the evacuation from the South coast in July and August, 1940, following Dunkirk, when over 1,500,000 inter-area or " external " removals (see above) were recorded, followed immediately by the " blitz " removals from September to December, 1940, during which time 3,600,000 " external " removals were notified, and the second during the V1 and V2 operations of August 1944, when the figure reached nearly 950,000 followed by nearly 1,500,000 in the next two months. Despite the enormous total number of maintenance items, indeed perhaps because of it, it is true to say that, when the account was closed on 21st February, 1952, the Register contained an accurate, up-to-date record of the movements and the current name and residence of practically the whole of the 43 million civilians then living in England and Wales. Such a result could be secured only by precise and detailed planning of the Register *ab initio*, strict control of local operations, complete uniformity of procedure and a high degree of co-operation between all concerned.



# PARLIAMENTARY AND LOCAL GOVERNMENT ELECTORS

The considerable legislative and other changes affecting the statistics of electoral registers during the war and immediate post-war years were fully recounted in the Civil Text Volume of the Statistical Review for 1946-50, pages 170-172.

## Electoral Registers

The procedure, as established by the Electoral Registers Act and the Representation of the People Act, 1949, is that a local register based on a canvass is prepared in the autumn of each year, distinguishing between (a) those who are parliamentary and local government electors by virtue of residence on the qualifying date and (b) local government electors who on the qualifying date had a non-resident qualification by occupying as owner or tenant any rateable land or premises of not less than £10 rateable value per occupier. There is also a service register for any member of the forces and other persons employed in the service of the Crown in a post outside the United Kingdom (and for their wives if with them). The qualifying date was 20th November in England and Wales and the registers were to be published not later than 15th March of the following year. A provision affecting the numbers on the register is that a person not of full age on the qualifying date but of full age on the following 15th June is to be included on the register though there is no entitlement to vote in any election before 2nd October of the latter year ; the 1951 register was the first to be affected in this way.

**Table CXXXVII.—Parliamentary and Local Government Electors. England and Wales, 1918 to 1951**

Register	Parliamentary Register (including University Constituencies to 1948)			Local Government Register
	Total	Business Premises qualifications (Included in Total)	Persons on Absent Voters' List (included in Total)	
1918 (Autumn) ...	17,222,983	159,013	3,362,028	13,930,130
1928 (Autumn) ...	19,866,649	205,793	154,432	17,179,487
1929 (Spring) ...	25,095,793	371,594	174,731	18,620,395
1939 (Autumn) ...	28,348,555	354,831	168,480	21,685,772
(Qualifying date in brackets)	Total	Business Premises Register (included in Total)	Service Register (included in Total)	Local Government Register
1945 (30th June) ...	29,368,684	55,164	2,749,531	29,216,823
1946 (30th June) ...	30,736,362	51,645	1,015,259	30,591,738
1947 (30th June) ...	31,270,504	54,162	478,085	31,105,904
1948 (30th June) ...	31,629,861	49,575	284,004	31,455,419
1949 (10th June) ...	30,173,966	—	127,334	30,258,862
1950(20th Nov.1949)	30,206,667	—	164,743	30,306,024
1951(20th Nov.1950)	30,392,459	—	216,749	30,501,306

## Total Electorate

The particulars recorded in Tables U and V for 1951 have been taken from statements furnished to the Register General by the Registration Officers of the several areas, and relate to the register which came into force on 16th March, 1951.

Table U refers to Parliamentary and Table V to Local Government electors and elections. From these tables has been extracted the summary in Table CXXXVII showing the total electorate at various dates, selected to demonstrate the changing franchise. Comparison of the registers of 1928 and 1929 shows the effect of the commencement of the Act of 1928, the first to give to women the same franchise as to men, and comparison of the registers of 1939 and 1945 indicates the effect of the Act of 1945, which increased the local government electorate by the addition of those qualified for the parliamentary electorate but previously not entitled to vote at local government elections.

The total Parliamentary Electorate included prior to 1949 plural representation in the case of those persons registered in more than one constituency by reason of their possessing the necessary residence or business qualification or being entitled to be registered in respect of a University constituency. The percentages which this total electorate represented of the estimated total population in 1938 and 1939 and from 1945 to 1950 were :

1938	1939	1945	1946	1947	1948	1949	1950	1951
68.4	68.4	68.9	72.0	72.6	72.7	68.9	68.6	69.1

The changes made in Parliamentary franchise between 1939 and 1945-48 did not affect sufficiently large numbers of persons to exert a significant influence on the percentages, but the lower proportion of minors in the age structure of the post-war population compared with that of the pre-war population was such that a rise of some 1-2 per cent in the electoral proportion was to be expected on this account alone. The low proportion in 1945 is probably to be attributed in part to a degree of incompleteness in the service register of that year. The fall in the proportion in 1949 was due to the elimination of business premises and university qualifications.

In contrast there was a considerable increase in the Local Government franchise in the post-war as compared with the pre-war period. Reference should be made to the Acts concerned, in particular to those of 1928, 1943, 1944 and 1945, for a precise appraisal of the changes made, but in brief the *parliamentary* qualification had previously been based on *residence* and the *local* qualification on *occupation* of property ; the Act of 1945 changed the basis of *local* qualification to residence *or* occupation. The change resulted in a substantial rise in the proportion of the total population included in the local electorate from 51.8 per cent and 52.3 per cent in 1938 and 1939 respectively to 71.6 per cent in 1946 and 69.3 in 1951, the latter proportions being virtually the same as those for Parliamentary electors.

## Redistribution of Seats

A Committee on Electoral Machinery was set up in 1942 to consider the problem of readjustment of procedure when the war ended and especially to consider what might be done to remedy the maldistribution of parliamentary seats which had developed since the previous redistribution of 1917 and 1918. In 1944 a Speaker's Conference on Electoral Reform and Redistribution of Seats advised on the principles by which the proposed Boundary Commissions should be guided. There



followed the House of Commons (Redistribution of Seats) Act, 1944, setting up permanent Boundary Commissions with the primary function of performing the longer term and major task of a full redistribution, but who were required first to carry out a temporary redistribution in the constituencies with the most severe under-representation. The twenty single-member constituencies, named in the Act, with electorates in 1939 exceeding 100,000 were to be divided, seventeen of these with electorates under 150,000 were each to be divided into two new single-member constituencies, one with between 150,000 and 200,000 electors into three and the remaining two with between 200,000 and 250,000 electors into four.

The improvement effected by this temporary measure may be judged in two ways. The largest single-member constituency in England before the redistribution had an electorate of 208,609 ; the constituency which became the largest after the redistribution had 97,603. Alternatively it may be seen in Table CXXXVIII that the average size of the constituencies concerned in the redistribution was reduced from 126,480 to the more normal average size of 56,213.

**Table CXXXVIII.—Average size of Constituencies per member before and after Temporary Redistribution under the House of Commons (Redistribution of Seats) Act, 1944**

Parliamentary Boroughs and Counties*				Total Electorate (1939)	Total Number of Members	Average Electorate per member
The twenty divided con- stituencies				Before division	20	126,480
				After division	45	56,213
Other English constituencies :						
With 1 member	...	...	...	23,036,352	443	52,001
With 2 members	...	...	...	1,000,213	22	45,464
Welsh constituencies	...	...	...	1,652,712	35	47,220

\* The twenty constituencies which were divided were all in England.

The division of these 20 single-member constituencies into 45 similar constituencies raised, by 25, the number of geographical constituencies and the number of members they returned, which had been 509 and 520 respectively in 1939. Thus the new division of England and Wales, employed in Table U for the years 1945–47, consisted of 534 geographical constituencies, of which 11 were represented by 2 members each, and 5 university constituencies, 3 of which were represented by 2 members each ; making in all, 539 constituencies and 553 members. In 1949 (as a result of legislation in 1948) the University constituencies were abolished.

The House of Commons (Redistribution of Seats) Act, 1949, which consolidated previous legislation provided for permanent Boundary Commissions (one each for England, Wales, Scotland and N. Ireland) whose duty it was to keep parliamentary representation under constant review and to make recommendations to the Secretary of State from time to time as to any redistribution of seats which might seem to be desirable. All the 2-member constituencies have been divided and other adjustments of boundary have been made. At the end of 1951 there were 542 constituencies each with 1 member. The average electorate per member in England and Wales was 56,075 ; the highest was 79,730 and the lowest 27,831.





# APPENDIX A

## Estimated Total, Civilian and Home Populations by Sex and Age. England and Wales, 31st December, 1951

(Thousands)

Age Group				Total	Civilian	Home
MALES						
0-	..	..	..		1,853	
5-	..	..	..		1,700	
10-	..	..	..		1,433	
15-	..	..	..	1,391	1,112	1,323
20-	..	..	..	1,480	1,223	1,386
25-	..	..	..	1,603	1,525	1,580
30-	..	..	..	1,572	1,516	1,552
35-	..	..	..	1,618	1,580	1,607
40-	..	..	..	1,682	1,660	1,677
45-	..	..	..	1,583	1,575	1,583
50-	..	..	..	1,346	1,343	1,345
55-	..	..	..	1,107	1,106	1,106
60-	..	..	..	952	952	952
65-	..	..	..		781	
70-	..	..	..		590	
75-	..	..	..		378	
80-	..	..	..		176	
85 and over	..	..	..		63	
All Ages	..	..	..	21,308	20,566	21,085
FEMALES						
0-	..	..	..		1,768	
5-	..	..	..		1,622	
10-	..	..	..		1,382	
15-	..	..	..	1,386	1,381	1,386
20-	..	..	..	1,479	1,470	1,478
25-	..	..	..	1,607	1,605	1,606
30-	..	..	..	1,594	1,593	1,594
35-	..	..	..	1,668	1,667	1,668
40-	..	..	..	1,709	1,708	1,709
45-	..	..	..		1,636	
50-	..	..	..		1,499	
55-	..	..	..		1,347	
60-	..	..	..		1,212	
65-	..	..	..		1,046	
70-	..	..	..		850	
75-	..	..	..		566	
80-	..	..	..		284	
85 and over	..	..	..		139	
All Ages	..	..	..	22,794	22,775	22,792
PERSONS						
All Ages	..	..	..	44,102	43,341	43,877

## APPENDIX B

*Note.*—Tables similar to those in this Appendix, but covering earlier years, have been published as follows :

Type of data	Statistical Review		
	Text, 1938-39  page	Text, Civil 1940-45  page	Text, Civil 1946-50  page
Female population at ages 15-50 for years prior to 1938 .. .. .	232-233	—	—
Female populations at ages 15-50 for years 1938-45	}	161-162	—
Male populations at ages 15-50 for years prior to 1946 .. .. .			
Male and Female populations at ages 15-50 for years 1946-50 .. .. .			
Marriages:			
Women at ages under 50 prior to 1938 ..	234	—	—
Women at ages under 50, 1938-45 .. ..	}	163	—
Men at ages under 50 prior to 1946 .. ..			
Men and women under 50, 1946-50 .. ..			
Estimated years of life spent within given age groups:			
1938-45 .. .. .	—	164-167	—
1946-50 .. .. .	—	—	184-186
Maternities by legitimacy:			
1938-45 .. .. .	—	168-170	—
1946-50 .. .. .	—	—	188-190
Maternity rates per year of exposure:			
1938-45 .. .. .	—	172-174	—
1946-50 .. .. .	—	—	192-194
Legitimate maternities (classified by mother's age, duration of marriage and number of previous children( :			
1938-45 .. .. .	—	176-191	—
1946-50 .. .. .	—	—	200-209



# APPENDIX B

Table 1.—(a) Population in thousands at ages 15-50 } 1951.  
(b) Annual Marriages at ages under 50 } England and Wales

Notes.— (i) For records of earlier years, see notes on page 298.  
(ii) In section (e), not stated ages have been rateably distributed.

Age	Population in thousands						Proportion Married [ (b) ÷ (a) ] (d)		Number of marriages in hundreds (e)		Marriages per 1,000 non-married at each age [ (e) ÷ (c) ] (f)	
	All marital conditions (a)		Married (b)		Non-married [Single, widowed and divorced] (c)							
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
15-20	1,389	1,384	7	58	1,382	1,326	.0050	.0419	86.1	541.4	6.2	40.8
20-25	1,481	1,487	335	706	1,146	781	.2262	.4748	1451.0	1721.8	126.6	221.0
25-30	1,626	1,633	1,049	1,260	577	373	.6451	.7716	1025.6	623.3	177.7	167.1
30-35	1,549	1,575	1,242	1,308	307	267	.8018	.8305	399.3	254.2	130.1	95.2
35-40	1,638	1,687	1,402	1,408	236	279	.8559	.8346	213.7	156.8	90.6	56.2
40-45	1,688	1,711	1,472	1,391	216	320	.8720	.8130	130.8	106.0	60.6	33.1
45-50	1,569	1,629	1,380	1,270	189	359	.8795	.7796	91.8	74.5	48.6	20.8
15-50	10,940	11,106	6,887	7,401	4,053	3,705	.6295	.6664	3398.3	3478.0	83.8	93.9
20-40	6,294	6,382	4,028	4,682	2,266	1,700	.6400	.7336	3089.6	2756.1	136.3	162.3

## APPENDIX B

**Table 2.—Estimated years of life spent within given age groups in the calendar year**  
(Figures in tens)

Age of woman	Non-married	MARRIED, the Marriage Duration† being									
		All durations	0-2½ months	2½-5½ months	5½-8½ months	0-8½ months	8½-11½ months	11½-14½ months	14½-17½ months	17½-20½ months	20½-23½ months
15-19	132600	5800	1012	1032	858	2902	680	562	445	356	256
20-24	78100	70600	3492	4234	4264	11990	4249	4174	4110	4104	4024
25-29	37300	126000	1330	1722	1844	4896	1951	2019	2188	2374	2517
30-34	26700	130800	540	686	727	1953	765	784	841	902	947
35-39	27900	140800	331	408	423	1162	440	444	464	488	503
40-44	32000	139100	224	275	280	779	288	287	298	314	324
45-49	35900	127000	159	194	196	549	201	200	203	209	212
15-44	334600	613100	6929	8357	8396	23682	8373	8270	8346	8538	8571
15-49	370500	740100	7088	8551	8592	24231	8574	8470	8549	8747	8783

**Table 3.—Maternities by legitimacy showing numbers‡ of**

Age of woman	Illegitimate maternities	LEGITIMATE MATERNITIES, the Marriage Duration† being									
		All durations	0-2½ months	2½-5½ months	5½-8½ months	0-8½ months	8½-11½ months	11½-14½ months	14½-17½ months	17½-20½ months	20½-23½ months
15-19	4,924	24,608	1,422	6,182	6,856	14,460	3,034	1,898	1,366	1,167	874
20-24	9,763	179,367	2,002	8,998	13,792	24,792	20,100	15,436	12,000	11,047	10,600
25-29	7,916	212,680	768	2,371	3,881	7,020	8,616	6,815	5,623	5,366	5,658
30-34	5,703	135,567	392	850	1,454	2,696	3,069	2,370	1,965	1,868	1,864
35-39	3,669	74,780	190	377	593	1,160	1,043	958	827	726	681
40-44§	1,469	23,961	93	131	125	349	221	212	193	178	165
15-44	33,444	650,963	4,867	18,909	26,701	50,477	36,083	27,689	21,974	20,352	19,842

**Table 4.—Maternity Rates (per year of exposure, see Table 2), showing**

Age of woman	Illegitimate maternity rate	LEGITIMATE MATERNITY RATES,   the Marriage Duration† being									
		All durations	0-2½ months	2½-5½ months	5½-8½ months	0-8½ months	8½-11½ months	11½-14½ months	14½-17½ months	17½-20½ months	20½-23½ months
15-19	·0037	·424	·141	·599	·799	·498	·446	·338	·307	·328	·341
20-24	·0125	·254	·057	·213	·323	·207	·473	·370	·292	·269	·263
25-29	·0212	·169	·058	·138	·210	·143	·442	·338	·257	·226	·225
30-34	·0214	·104	·073	·124	·200	·138	·401	·302	·234	·207	·197
35-39	·0132	·053	·057	·092	·140	·100	·237	·216	·178	·149	·135
40-44§	·0046	·017	·042	·048	·045	·045	·077	·074	·065	·057	·051
15-44	·0100	·106	·070	·226	·318	·213	·431	·335	·263	·238	·232

\* For records of earlier years, see notes on page 298.

† Durations shown in years, e.g. 1-, 2-, etc., should be read as strictly meaning 11½ m.-1 y. 11½ m., 1y. 11½ m.-2y. 11½ m., etc.

‡ "Not stated" cases have been distributed as in Table 1 of this Appendix.



(a) Non-married women  
(b) Married women at successive marriage durations

} England and  
Wales, 1951\*

(Figures in tens)

MARRIED, the Marriage Duration† being										Age of woman
1-year	2-years	3-years	4-years	5-years	6-years	7-years	8-years	9-years	10 years and over	
1619	502	96	1	—	—	—	—	—	—	15-19
16412	14479	11114	6934	3533	1459	362	67	1	—	20-24
9098	11883	15173	16378	17172	14899	11445	9869	7391	5845	25-29
3474	4444	5900	6793	8100	8036	7886	10461	15359	57629	30-34
1899	2279	2865	3063	3165	2883	2924	3786	5881	110453	35-39
1223	1407	1663	1760	1735	1515	1519	1824	2453	122934	40-44
824	905	996	1026	1042	937	926	1042	1315	117237	45-49
33725	34994	36811	34929	33705	28792	24136	26007	31085	296861	15-44
34549	35899	37807	35955	34747	29729	25062	27049	32400	414098	15-49

(a) Illegitimate Maternities by Mother's Age ;  
(b) Legitimate Maternities by Mother's Age and Marriage Duration combined ;

} England  
and Wales,  
1951\*

LEGITIMATE MATERNITIES, the Marriage Duration† being										Age of woman
1-year	2-years	3-years	4-years	5-years	6-years	7-years	8-years	9-years	10 years and over	
5,305	1,522	276	11	—	—	—	—	—	—	15-19
49,083	35,292	25,421	14,441	6,961	2,427	649	163	38	—	20-24
23,462	24,838	29,546	30,803	28,206	20,117	13,825	11,270	8,123	6,854	25-29
8,067	8,107	9,454	10,656	11,247	9,260	7,902	9,964	12,984	42,161	30-34
3,192	2,794	3,085	3,136	3,066	2,425	2,142	2,537	3,480	46,720	35-39
748	716	657	663	632	446	373	441	554	18,161	40-44
89,857	73,269	68,439	59,710	50,112	34,675	24,891	24,375	25,179	113,896	15-44

(a) Illegitimate rates by Mother's Age ;  
(b) Legitimate rates by Mother's Age and Marriage Duration combined ;

} England  
and Wales,  
1951\*

LEGITIMATE MATERNITY RATES,   the Marriage Duration† being										Age of woman
1-year	2-years	3-years	4-years	5-years	6-years	7-years	8-years	9-years	10 years and over	
·328	·303	·288	—	—	—	—	—	—	—	15-19
·299	·244	·229	·208	·197	·166	·179	·243	—	—	20-24
·258	·209	·195	·188	·164	·135	·121	·114	·110	·117	25-29
·232	·182	·160	·157	·139	·115	·100	·095	·085	·073	30-34
·168	·123	·108	·102	·097	·084	·073	·067	·059	·042	35-39
·061	·051	·040	·038	·036	·029	·025	·024	·023	·015	40-44
·266	·209	·186	·171	·149	·120	·103	·094	·081	·038	15-44

§ The few maternities to women over 45 years of age have been included in the 40-44 age group.

|| The table rates per year of exposure are the same as the rates per woman except where the marriage duration is less than a full year, in which case the rate per woman is the table rate multiplied by the fraction of the duration year involved.

**Table 5.—Total Maternities achieved per 1,000 Women marrying under duration**

*Note.*—(a) Each cohort associated with two calendar years represents the number of marriages.  
 (b) The nominal age at marriage is more precisely the age at the time of exposure to marriage at the nominal age.

**PART I. Total Maternities.**

Original cohort of new marriages	Marriage Duration *										
	8½ mths.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
	Nominal age at Marriage :					All ages under 45					
1937-38	187	285	527	711	852	999	1,138	1,275	1,384	1,511	1,642
1938-39	164	256	487	656	825	978	1,132	1,254	1,404	1,531	1,661
1939-40	117	199	409	597	762	922	1,050	1,222	1,374	1,481	1,591
1940-41	109	188	411	592	762	898	1,077	1,249	1,372	1,463	1,561
1941-42	110	189	421	610	760	947	1,139	1,278	1,392	1,486	1,581
1942-43	124	211	473	651	843	1,053	1,211	1,352	1,462	1,552	
1943-44	134	240	492	704	919	1,089	1,233	1,352	1,451		
1944-45	113	226	509	750	941	1,105	1,244	1,361			
1945-46	117	237	569	798	993	1,162	1,306				
1946-47	159	310	605	826	1,012	1,179					
1947-48	162	292	574	781	964						
1948-49	164	274	540	747							
1949-50	158	267	532								
1950-51	151	259									
	Under 25										
1937-38	261	365	639	855	1,022	1,194	1,354	1,514	1,642	1,798	1,941
1938-39	225	324	586	785	978	1,150	1,325	1,465	1,643	1,796	1,941
1939-40	151	239	478	688	869	1,048	1,192	1,395	1,576	1,704	1,841
1940-41	134	218	468	666	854	1,006	1,216	1,422	1,568	1,679	1,811
1941-42	129	213	466	672	838	1,051	1,277	1,440	1,574	1,688	1,811
1942-43	143	234	520	715	927	1,169	1,352	1,517	1,647	1,755	
1943-44	154	266	540	771	1,016	1,211	1,380	1,522	1,639		
1944-45	132	252	551	821	1,036	1,222	1,382	1,518			
1945-46	140	265	630	887	1,108	1,302	1,472				
1946-47	196	363	692	944	1,159	1,355					
1947-48	204	350	667	904	1,118						
1948-49	208	331	628	865							
1949-50	198	318	614								
1950-51	187	304									
	25-29										
1937-38	112	208	437	607	735	876	1,013	1,148	1,255	1,376	1,491
1938-39	98	189	409	559	723	878	1,032	1,151	1,299	1,422	1,541
1939-40	74	154	341	521	685	841	968	1,129	1,270	1,370	1,471
1940-41	77	155	362	541	708	842	1,011	1,167	1,280	1,364	1,461
1941-42	81	159	379	567	713	892	1,065	1,194	1,301	1,382	1,481
1942-43	96	184	440	613	805	1,000	1,149	1,281	1,380	1,458	
1943-44	103	218	464	677	882	1,040	1,173	1,278	1,368		
1944-45	86	206	507	738	922	1,082	1,215	1,324			
1945-46	96	228	565	791	984	1,150	1,289				
1946-47	136	298	595	814	1,000	1,166					
1947-48	127	262	542	748	926						
1948-49	120	233	494	694							
1949-50	111	225	480								
1950-51	101	211									

\* The durations identified are more precise than those shown in the table.



# e 45 by successive cohorts of marriages by the end of successive marriage

men exposed to risk at durations under one year in the second of the associated years.  
 t year of marriage. The actual age at marriage is approximately half a year less than the

**PART II.** Total Maternities excluding the effect of pre-nuptial conception  
 from the Maternities of the first year of marriage in respect of each cohort.

Original cohort of new marriages	Marriage Duration *										
	8½ mths.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
	Nominal age at Marriage :					All ages under 45					
1937-38	121	363	547	688	835	974	1,111	1,220	1,347	1,456	
1938-39	110	341	510	679	832	986	1,108	1,258	1,385	1,477	
1939-40	93	302	491	656	816	944	1,116	1,268	1,375	1,459	
1940-41	89	312	493	663	799	978	1,150	1,273	1,364	1,445	
1941-42	89	321	510	660	847	1,039	1,178	1,292	1,386	1,464	
1942-43	99	361	539	731	941	1,099	1,240	1,350	1,440		
1943-44	122	374	586	801	971	1,115	1,234	1,333			
1944-45	127	410	651	842	1,006	1,145	1,262				
1945-46	136	468	697	892	1,061	1,205					
1946-47	180	475	696	882	1,049						
1947-48	155	437	644	827							
1948-49	132	398	605								
1949-50	129	394									
1950-51	127										
	Under 25										
1937-38	141	415	631	798	970	1,130	1,290	1,418	1,574	1,709	
1938-39	128	390	589	782	954	1,129	1,269	1,447	1,600	1,712	
1939-40	104	343	553	734	913	1,057	1,260	1,441	1,569	1,672	
1940-41	97	347	545	733	885	1,095	1,301	1,447	1,558	1,657	
1941-42	96	349	555	721	934	1,160	1,323	1,457	1,571	1,666	
1942-43	106	392	587	799	1,041	1,224	1,389	1,519	1,627		
1943-44	132	406	637	882	1,077	1,246	1,388	1,505			
1944-45	138	437	707	922	1,108	1,268	1,404				
1945-46	145	510	767	988	1,182	1,352					
1946-47	208	537	789	1,004	1,200						
1947-48	183	500	737	951							
1948-49	155	452	689								
1949-50	150	446									
1950-51	144										
	25-29										
1937-38	108	337	507	635	776	913	1,048	1,155	1,276	1,379	
1938-39	101	321	471	635	790	944	1,063	1,211	1,334	1,420	
1939-40	86	273	453	617	773	900	1,061	1,202	1,302	1,378	
1940-41	85	292	471	638	772	941	1,097	1,210	1,294	1,367	
1941-42	85	305	493	639	818	991	1,120	1,227	1,308	1,373	
1942-43	97	353	526	718	913	1,062	1,194	1,293	1,371		
1943-44	128	374	587	792	950	1,083	1,188	1,278			
1944-45	131	432	663	847	1,007	1,140	1,249				
1945-46	146	483	709	902	1,068	1,207					
1946-47	188	485	704	890	1,056						
1947-48	155	435	641	819							
1948-49	128	389	589								
1949-50	128	383									
1950-51	122										

1½ months, 1 yr. 11½ months, 2 yrs. 11½ months, etc.

Continued on page 305.

PART I—(continued)

(See notes on pages 302 and 303)

Original cohort of new marriages	Marriage Duration *										
	8½ mths.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
Nominal age at Marriage :											
	30-34										
1937-38	101	204	416	559	668	778	886	986	1,060	1,128	1,191
1938-39	92	184	377	515	648	775	896	990	1,079	1,149	1,211
1939-40	71	153	330	482	621	753	855	965	1,051	1,108	1,161
1940-41	76	156	347	502	645	761	885	987	1,060	1,104	1,151
1941-42	80	157	359	519	649	787	909	996	1,059	1,101	1,151
1942-43	89	175	397	550	705	847	957	1,045	1,102	1,144	
1943-44	101	203	420	607	765	891	988	1,060	1,116		
1944-45	85	193	452	642	791	913	1,012	1,085			
1945-46	85	202	481	668	818	945	1,042				
1946-47	108	239	486	655	793	907					
1947-48	106	216	444	603	732						
1948-49	103	196	420	577							
1949-50	105	207	430								
1950-51	98	198									
	35-39										
1937-38	85	156	295	387	453	506	545	573	591	601	600
1938-39	74	140	269	357	436	493	531	559	578	590	599
1939-40	64	122	251	344	420	479	518	546	566	575	588
1940-41	64	127	262	359	436	490	535	565	583	589	599
1941-42	67	124	263	362	434	495	540	565	579	585	588
1942-43	74	138	293	392	480	549	585	614	628	634	
1943-44	78	144	296	402	485	540	572	591	602		
1944-45	69	142	311	427	504	557	589	608			
1945-46	69	145	327	433	511	564	599				
1946-47	81	162	318	417	489	536					
1947-48	77	148	299	388	452						
1948-49	82	145	293	385							
1949-50	77	143	289								
1950-51	71	130									
	40-44										
1937-38	40	68	111	133	145	150	153	154	155	155	155
1938-39	38	64	103	126	138	144	147	149	150	150	150
1939-40	28	50	89	111	124	131	134	135	137	137	137
1940-41	33	56	98	124	138	145	148	150	151	151	151
1941-42	31	51	95	119	132	137	140	142	143	144	144
1942-43	43	66	110	134	149	158	160	162	163	163	
1943-44	44	64	112	135	150	157	160	162	163		
1944-45	34	60	108	136	150	156	158	159			
1945-46	30	54	106	130	143	149	152				
1946-47	35	61	112	137	147	154					
1947-48	35	58	105	128	138						
1948-49	36	55	96	121							
1949-50	33	55	97								
1950-51	32	51									



## PART II—(continued)

(See notes on pages 302 and 303)

Marriage Duration *											
	8½ mths.	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years	10 years
Nominal age at Marriage :											
30-34											
-38	115	327	470	579	689	797	897	971	1,039	1,088	
-39	101	294	432	565	692	813	907	996	1,066	1,109	
-40	88	265	417	556	688	790	900	986	1,043	1,080	
-41	87	278	433	576	692	816	918	991	1,035	1,067	
-42	84	286	446	576	714	836	923	986	1,028	1,058	
-43	94	316	469	624	766	876	964	1,021	1,063		
-44	113	330	517	675	801	898	970	1,026			
-45	118	377	567	716	838	937	1,010				
-46	128	407	594	744	871	968					
-47	147	394	563	701	815						
-48	123	351	510	639							
-49	104	328	485								
-50	114	337									
-51	111										
35-39											
-38	78	217	309	375	428	467	495	513	523	528	
-39	71	200	288	367	424	462	490	509	521	528	
-40	62	191	284	360	419	458	486	506	515	520	
-41	67	202	299	376	430	475	505	523	529	532	
-42	61	200	299	371	432	477	502	516	522	525	
-43	69	224	323	411	480	516	545	559	565		
-44	72	224	330	413	468	500	519	530			
-45	78	247	363	440	493	525	544				
-46	82	264	370	448	501	536					
-47	88	244	343	415	462						
-48	77	228	317	381							
-49	69	217	309								
-50	72	218									
-51	64										
40-44											
-38	29	72	94	106	111	114	115	116	116	116	
-39	27	66	89	101	107	110	112	113	113	113	
-40	23	62	84	97	104	107	108	110	110	110	
-41	24	66	92	106	113	116	118	119	119	119	
-42	21	65	89	102	107	110	112	113	114	114	
-43	24	68	92	107	116	118	120	121	121		
-44	21	69	92	107	114	117	119	120			
-45	27	75	103	117	123	125	126				
-46	25	77	101	114	120	123					
-47	27	78	103	113	120						
-48	24	71	94	104							
-49	20	61	86								
-50	23	65									
-51	20										

# APPENDIX B

**Table 6.—Legitimate Maternities of 1951 classified by Mother's Age, Duration of Marriage and Number of Previous Children. England and Wales**

*Note* :—(i) For similar tables covering earlier years, see note on page 298.

(ii) Table for 1951 already published as SS in Part II of the Statistical Review of that year but here adjusted by an ordered distribution of all Not Stated records. The adjusted figures by age, for all durations and numbers of previous children combined, differ to a slight and unimportant extent from those shown in Table EE of Part II.

(iii) Statements of numbers of children which were incompatible with the duration of marriage were not questioned and are recorded without modification. Such children, if incorrectly stated, were presumably illegitimate or offspring of a previous marriage.

Marriage duration	LEGITIMATE MATERNITIES : the number of previous children (surviving, dead or stillborn) by present husband being												
	Total	0	1	2	3	4	5	6	7	8	9	10-14	15 & over
<b>Mothers of all Ages</b>													
All durations	650,963	252,658	203,590	101,917	45,014	21,432	10,967	6,102	3,600	2,317	1,468	1,815	83
0-8 mths.	50,477	49,915	441	73	29	12	4	2	—	—	—	1	—
9-11 "	36,083	35,431	602	36	8	4	2	—	—	—	—	—	—
0- yrs.	86,560	85,346	1,043	109	37	16	6	2	—	—	—	1	—
1- "	89,857	73,572	15,307	831	99	28	13	5	1	1	—	—	—
2- "	73,269	34,979	33,558	4,285	365	58	15	5	2	—	1	1	—
3- "	68,439	21,589	35,089	10,247	1,274	193	32	11	2	1	1	—	—
4- "	59,710	12,678	30,270	13,235	3,014	437	48	18	4	5	1	—	—
5- "	50,112	7,911	23,882	12,811	4,340	986	145	24	3	6	—	4	—
6- "	34,675	4,394	15,017	9,829	3,895	1,210	249	64	6	5	3	3	—
7- "	24,891	2,434	9,571	7,474	3,560	1,376	365	77	17	12	3	2	—
8- "	24,375	2,267	8,744	7,334	3,645	1,529	606	194	40	10	2	4	—
9- "	25,179	2,167	8,609	7,500	3,949	1,818	761	286	70	13	3	3	—
10- "	81,555	4,665	19,809	23,082	15,353	9,015	4,929	2,479	1,236	569	257	159	2
15- "	25,307	584	2,409	4,565	4,652	3,902	2,938	2,179	1,581	1,044	693	747	13
20- "	6,408	65	266	586	782	811	795	696	579	585	434	754	55
25- "	615	7	16	28	48	52	63	61	59	65	69	134	13
30 & over	11	—	—	1	1	1	2	1	—	1	1	3	—
<b>Mothers aged 16-19</b>													
All durations	24,608	21,193	3,133	270	12	—	—	—	—	—	—	—	—
0-8 mths.	14,460	14,413	47	—	—	—	—	—	—	—	—	—	—
9-11 "	3,034	2,968	64	2	—	—	—	—	—	—	—	—	—
0- yrs.	17,494	17,381	111	2	—	—	—	—	—	—	—	—	—
1- "	5,305	3,497	1,771	37	—	—	—	—	—	—	—	—	—
2- "	1,522	290	1,091	137	4	—	—	—	—	—	—	—	—
3- "	276	23	153	93	7	—	—	—	—	—	—	—	—
4- "	11	2	7	1	1	—	—	—	—	—	—	—	—
<b>Mothers aged 20-24</b>													
All durations	179,367	108,947	51,630	14,841	3,183	658	89	17	1	1	—	—	—
0-8 mths.	24,792	24,595	172	23	2	—	—	—	—	—	—	—	—
9-11 "	20,100	19,840	250	10	—	—	—	—	—	—	—	—	—
0- yrs.	44,892	44,435	422	33	2	—	—	—	—	—	—	—	—
1- "	49,083	39,904	8,824	339	15	1	—	—	—	—	—	—	—
2- "	35,292	15,080	17,872	2,220	104	15	1	—	—	—	—	—	—
3- "	25,421	6,510	13,624	4,789	461	36	—	1	—	—	—	—	—
4- "	14,441	2,138	6,974	4,147	1,052	122	6	2	—	—	—	—	—
5- "	6,961	656	2,871	2,243	937	228	22	3	—	1	—	—	—
6- "	2,427	188	815	806	428	153	29	7	1	—	—	—	—
7- "	649	22	174	205	142	83	20	3	—	—	—	—	—
8- "	163	10	40	48	37	18	9	1	—	—	—	—	—
9- "	38	4	14	11	5	2	2	—	—	—	—	—	—



**Table 6.—1951 (continued)**  
(See notes on first page of table)

Marriage duration	LEGITIMATE MATERNITIES: the number of previous children (surviving, dead or stillborn) by present husband being												
	Total	0	1	2	3	4	5	6	7	8	9	10-14	15 & over
<b>Mothers aged 25-29</b>													
All durations	212,680	76,167	78,925	36,624	13,596	4,942	1,648	569	135	55	12	7	—
0-8 mths.	7,020	6,859	117	26	13	3	2	—	—	—	—	—	—
9-11 "	8,616	8,420	179	12	2	2	1	—	—	—	—	—	—
0- yrs.	15,636	15,279	296	38	15	5	3	—	—	—	—	—	—
1- "	23,462	20,048	3,136	236	32	6	4	—	—	—	—	—	—
2- "	24,838	13,422	9,956	1,293	143	17	5	2	—	—	—	—	—
3- "	29,546	10,512	14,722	3,725	486	83	12	6	—	—	—	—	—
4- "	30,803	7,102	15,822	6,336	1,327	187	20	7	1	1	—	—	—
5- "	28,206	4,568	13,700	7,061	2,306	486	76	9	—	—	—	—	—
6- "	20,117	2,471	8,753	5,741	2,276	709	142	22	1	1	1	—	—
7- "	13,825	1,160	5,126	4,277	2,161	839	215	38	6	2	—	1	—
8- "	11,270	854	3,752	3,523	1,849	831	327	114	14	5	—	1	—
9- "	8,123	521	2,332	2,488	1,527	767	327	126	27	6	1	1	—
10-14,,	6,854	230	1,330	1,906	1,474	1,012	517	245	86	40	10	4	—
<b>Mothers aged 30-34</b>													
All durations	135,567	30,893	46,373	29,477	14,729	7,235	3,550	1,741	865	410	171	123	—
0-8 mths.	2,696	2,602	66	13	9	4	1	1	—	—	—	—	—
9-11 "	3,069	2,976	76	11	4	1	1	—	—	—	—	—	—
0- yrs.	5,765	5,578	142	24	13	5	2	1	—	—	—	—	—
1- "	8,067	6,768	1,098	148	32	11	7	2	—	1	—	—	—
2- "	8,107	4,285	3,284	442	73	17	5	1	—	—	—	—	—
3- "	9,454	3,228	4,791	1,150	221	49	10	3	1	1	—	—	—
4- "	10,656	2,510	5,566	2,006	464	89	15	4	2	—	—	—	—
5- "	11,247	2,010	5,571	2,627	792	203	33	9	—	2	—	—	—
6- "	9,260	1,287	4,251	2,526	884	231	57	20	2	2	—	—	—
7- "	7,902	924	3,280	2,288	946	338	87	28	5	5	1	—	—
8- "	9,964	1,053	3,843	2,909	1,347	522	210	58	17	4	1	—	—
9- "	12,984	1,174	4,825	3,817	1,892	806	319	116	27	6	1	1	—
10- "	40,120	2,054	9,574	11,247	7,708	4,601	2,513	1,312	650	279	110	72	—
15-19,,	2,041	22	148	293	357	363	292	187	161	110	58	50	—
<b>Mothers aged 35-39</b>													
All durations	74,780	12,174	19,358	16,536	10,140	6,269	3,870	2,435	1,586	1,041	663	691	17
0-8 mths.	1,160	1,114	30	7	2	4	1	1	—	—	—	1	—
9-11 "	1,043	1,010	29	1	2	1	—	—	—	—	—	—	—
0- yrs.	2,203	2,124	59	8	4	5	1	1	—	—	—	1	—
1- "	3,192	2,700	405	63	15	6	1	2	—	—	—	—	—
2- "	2,794	1,469	1,122	160	32	7	2	1	1	—	—	—	—
3- "	3,085	1,037	1,508	426	86	20	7	1	—	—	—	—	—
4- "	3,136	732	1,584	635	136	35	5	5	1	3	—	—	—
5- "	3,066	522	1,465	740	264	55	11	3	2	3	—	1	—
6- "	2,425	362	1,024	636	262	103	18	14	1	2	2	1	—
7- "	2,142	269	845	605	274	100	32	7	4	4	1	1	—
8- "	2,537	290	938	752	347	137	47	19	5	1	1	—	—
9- "	3,480	406	1,279	1,017	430	201	97	36	12	1	1	—	—
10- "	29,615	1,944	7,694	8,605	5,250	2,928	1,595	775	429	212	112	71	—
15- "	15,843	305	1,380	2,788	2,894	2,506	1,885	1,440	1,010	684	456	486	9
20-24,,	1,262	14	55	101	146	166	169	131	121	131	90	130	8
<b>Mothers aged 40 and over</b>													
All durations	23,961	3,284	4,171	4,169	3,354	2,328	1,810	1,340	1,013	810	622	994	66
0-8 mths.	349	332	9	4	3	1	—	—	—	—	—	—	—
9-11 "	221	217	4	—	—	—	—	—	—	—	—	—	—
0- yrs.	570	549	13	4	3	1	—	—	—	—	—	—	—
1- "	748	655	73	8	5	4	1	1	1	—	—	—	—
2- "	716	433	233	33	9	2	2	1	1	—	1	1	—
3- "	657	279	291	64	13	5	3	—	1	—	1	—	—
4- "	663	194	317	110	34	4	2	—	—	1	1	—	—
5- "	632	155	275	140	41	14	3	—	1	—	—	3	—
6- "	446	86	174	120	45	14	3	1	1	—	—	2	—
7- "	373	59	146	99	37	16	11	1	2	1	—	—	—
8- "	441	60	171	102	65	21	13	2	4	—	—	3	—
9- "	554	62	159	167	95	42	16	8	4	—	—	1	—
10- "	4,966	437	1,211	1,324	921	474	304	147	71	38	25	12	2
15- "	7,423	257	881	1,484	1,401	1,033	761	552	410	250	179	211	4
20- "	5,146	51	211	485	636	645	626	565	458	454	344	624	47
25- "	615	7	16	28	48	52	63	61	59	65	69	134	13
30 & over	11	—	—	1	1	1	2	1	—	1	1	3	—

## APPENDIX C

### MEDICAL STATISTICS BRANCH OF THE GENERAL REGISTER OFFICE, 31st DECEMBER, 1951

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R. M. Blaikley (Principal).

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## APPENDIX D

### MEMBERSHIP OF THE REGISTRAR GENERAL'S ADVISORY COMMITTEE ON MEDICAL NOMENCLATURE AND STATISTICS AND ITS SUB-COMMITTEES, 1951

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Professor W. C. W. Nixon, M.D., F.R.C.S., F.R.C.O.G.

W. N. Pickles, Esq., M.D., M.R.C.P.

Professor R. Platt, M.D., F.R.C.P. (from 16th November, 1951).

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*Sub-Committee on the Adaptation of the International Statistical Classification to the Needs of the Armed Services*

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*Joint Secretaries :* Miss E. Brooke.

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## APPENDIX E

### COMMITTEES ON MEDICAL AND NON-MEDICAL SUBJECTS ON WHICH OFFICERS OF THE GENERAL REGISTER OFFICE SERVED DURING THE YEAR 1951

Accidents in the Home,  
Standing Inter-Departmental Committee.

Boundary Commission for England.

Boundary Commission for Wales.

Committee for Research on Social and Environmental Health,  
Sub-Committee on Mass Miniature Radiography.

Government Local Offices Working Party.

Medical Nomenclature and Statistics Advisory Committee.

Ministry of Health,  
Working Party on Hospital Statistics.

Ministry of Pensions,  
Committee on Cardio-vascular disease and Mortality rates among Amputees.

National Health Service Records,  
Ministry of Health Committee.

Social and Economic Research,  
Inter-Departmental Committee.

Statistics of Passenger Movement  
Inter-Departmental Working Party.

World Health Organization,  
Expert Committee on Health Statistics.

## APPENDIX F

### ARTICLES BY OFFICERS OF THE GENERAL REGISTER OFFICE PUBLISHED DURING 1951

<i>Logan (W. P. D.)</i>	.. ..	Medical Significance of the Census. <i>British Medical Journal</i> No. 4709 : 720 ff., 1951.
<i>Logan (W. P. D.)</i>	.. ..	Mumps and Diabetes. <i>Monthly Bulletin of the Ministry of Health</i> , Vol. 10, 136 ff., 1951.
<i>Logan (W. P. D.)</i>	.. ..	Incidence of congenital malformations and their relation to virus infections during pregnancy. <i>British Medical Journal</i> No. 4732 : 641, 1951.
<i>Logan (W. P. D.) and Conybeare (E. T.)</i>		The Incidence and Prevention of Tetanus among Civilians. <i>British Medical Journal</i> No. 4705 : 504-8, 1951.
<i>Logan (W. P. D.) and MacKay (D. G.)</i>		Development of Influenza Epidemics. <i>The Lancet</i> No. 6649 : 284-7, 1951.
<i>Brooke (E. M.)</i>	.. ..	Death-Rates and Sickness-Rates of Married and Single Women in 1948. <i>The Lancet</i> No. 6667 : 1272-6, 1951.



## APPENDIX G

### NOTES ON THE WEATHER IN ENGLAND AND WALES DURING THE YEAR 1951

(Note :—See page ii for a note about the omission of this Appendix in future.)

The year 1951 was notably wet, being the wettest year since 1912. The first five months were rather cold while the summer months were characterized by the absence of any very warm days. Other notable features of the weather were the excessive rainfall from January to May inclusive, the mainly dry and sunny June, the severe thunderstorms accompanied by widespread heavy rain on July 22nd, the frequent heavy falls of rain in September, the very dry October and the exceptionally wet and unusually mild November. Snow occurred frequently during the first three months and snowfall was considerable at times in January.

Mean temperature for the year was equal to the average for the period 1906–35, the deviations from the average for the districts ranging from  $-0.4^{\circ}$  F. in north-east England to  $+0.3^{\circ}$  F. in eastern England. The first five months were all rather cold and in the summer months there were no very warm days. The last two months were mild in most areas, particularly November which was the mildest November since that of 1939. Extreme temperatures in the screen were  $86^{\circ}$  F. at Southend on July 28th and  $8^{\circ}$  F. at Houghall on January 2nd. The monthly deviations in  $^{\circ}$  F. from the average mean temperature or the period 1906–35 were as follows :

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
– 0.5	– 0.9	– 2.1	– 1.3	– 2.2	– 0.2	+ 0.9	– 1.0	+ 1.6	– 0.1	+ 3.9	+ 1.8

The general precipitation expressed as a percentage of the average for the period 1881–1915 was 124 and it was the wettest year since 1912. More than 130 per cent of the average occurred in three areas between Cader Idris and the Cleveland Hills, over practically the whole of south-east England, parts of Essex and locally in the Midlands and North Riding of Yorkshire. Between Weymouth and the London area totals exceeding 140 per cent were widespread and near Salisbury, Calshot and Petersfield they exceeded 150 per cent. The first five months were all very wet, February exceptionally so in south-east England where many places registered more than three times their average, while March, apart from March 1947, was the wettest since 1919. June was dry in most places ; locally on the south-west coast and around Cheltenham less than 25 per cent of the average rainfall was received. July also was mainly dry but the distribution was variable due to thunderstorms. August was excessively wet in south-east, east and Midland districts although less than the average occurred locally in northern England and inland in Wales. In September there were frequent heavy daily falls and it was very wet in parts of southern England. In strong contrast October was the second driest October in a record going back to 1869. November was excessively wet, being the wettest November since 1940. December was very wet in north-west England and north Wales with rainfall mostly below the average elsewhere. The table gives the monthly rainfall expressed as a percentage of the average :

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
127	186	175	135	140	55	67	156	141	31	207	100

Among heavy falls in 24 hours were 3.19 in. at Cardiff Water Works (Brecknockshire) on August 25th, 3.76 in. at Blaenau Festiniog (Merionethshire) on September 3rd, 3.34 in. at Oxford on September 6th and 4.53 in. at Thirlmere (Cumberland) on September 24th.



Thunderstorms occurred locally in each month of the year. They were rather frequent for the time of year in February, March, November and December. In April and May local thunderstorms occurred on many days and they were rather widespread on April 13th and 30th and May 2nd, 24th and 26th. Local thunderstorms were frequent from June to September and were somewhat widespread on June 9th, 10th, 12th, 17th-19th, 22nd and 25th, July 8th, 10th, 11th, 22nd, 30th and 31st, August 9th, 27th and 31st and September 13th and 27th. The storms on July 22nd were severe with widespread heavy rain ; in the south of England four people were killed by lightning.

Considerable snowfall occurred in January and snow lay 12 in. deep at Buxton, 10 in. at Malham Tarn and 8 in. at Lake Vyrnwy and Bellingham on the 1st and 11½ in. at Whipsnade and 9 in. at Birmingham on the 3rd. In February and March snow or sleet showers occurred frequently and level snow lay 7 in. deep at Bwlchgwyn on March 13th. In December snow or sleet occurred rather frequently on high ground and on the 26th snow lay to a depth of 3 to 4 in. at Malham Tarn.

The general sunshine expressed as a percentage of the average for the period 1906-35 was 100, the values for the districts ranging from 97 per cent in the Midland counties to 102 per cent in both north-east and south-east England. With regard to individual months over the country as a whole compared with the average the sunniest months were April, June and December and the dullest March, May and September. In January there was a marked deficiency in western and Midland districts. In February high values on individual days included 9.2 hours at Sandown and Ventnor on the 12th and 9.6 hours at Holyhead on the 28th. March was dull almost everywhere while April, in contrast, was almost universally sunny. May was dull particularly in eastern and midland districts. June was a sunny month generally while July was sunny in the south and east. In August and September the duration of bright sunshine was generally below the average particularly in southern and midland districts in the latter month. October was mainly rather sunny being the sunniest October since that of 1931. In November more than the average occurred locally in the south and Midlands but there was a substantial deficit in north-west England. In December a considerable excess was almost general in eastern districts and in the Midlands but in the west amounts were more variable. The table gives the monthly sunshine expressed as a percentage of the average :

<i>Jan.</i>	<i>Feb.</i>	<i>Mar.</i>	<i>Apr.</i>	<i>May</i>	<i>June</i>	<i>July</i>	<i>Aug.</i>	<i>Sept.</i>	<i>Oct.</i>	<i>Nov.</i>	<i>Dec.</i>
93	96	83	125	88	116	108	91	79	111	97	123

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